Audition 4

Advanced Digital Sound Editing

User's Manual

SunRize Industries

Credits

Audition 4 was written by Mathias Fischer, a recent West German University graduate
Mathias, in conjunction with Avantgarde Software in Hamburg , developed Audition 4
to be the fastest and most extensive 8 bit editor available for the Amiga.

Avantgarde Software

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First Edition
Third Printing

Before returning Audition 4 diskettes, please review the technical support instructions in this manual

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Table of Contents

Introduction

Audition 4 is the next generation digital sound editor that allows you to record and edit any sound in ways previously impossible. Written in 100% Assembly language, Audition 4 was designed from the ground up to be easy to use, fast, flexible and powerful. You can preview different echoes, flanges, filters, mixes, and fades without altering your original sample. While previewing an effect, you can alter its parameter in real time for instant feedback.

A sequencer is also included for editing multiple loop points. And creating autobooting Play Disks is possible with Audition 4's unique record to floppy disk feature. Audition 4 is the most advanced 8-bit sample editor available for the Amiga.

About this Manual

This manual provides information for installing and using Audition 4. The manual is divided into 12 Chapters. An Appendix and Index is also included.

Chapter 1 - Digital Audio

In recent years, digital audio has become increasingly popular. The most common use of digital audio is currently the Compact Disc player. Soon the DAT, or Digital Audio Tape, promises to replace cassette tapes, just like CDs have replaced albums.

Digital vs. Analog

Both CDs and DATs record numbers instead of analog signals. For example, a standard cassette tape records sound by magnetizing a tape. When the sound being recorded gets louder, the tape recorder writes a stronger magnetic field to the tape. When the sound gets softer, the tape player writes a softer magnetic field onto the tape. A DAT recorder, on the other hand, records numbers. For loud sounds, it writes a large number; for soft sounds, it writes a smaller number.

There are several reasons why numbers are better to record than analog signals (such as the magnetic signal on cassette tapes). For starters, it is much simpler to edit digital sound. Using a computer program like Audition 4, it is easy to move parts of sound around or insert one sound into the middle of another. In the analog world this is accomplished by cutting and splicing tape. Another advantage, and the reason the music industry is upset about DAT, is that when you copy digital audio you always get a perfect copy. Remember that digital sound is just numbers and is manipulated like any other data in your computer. When you copy a disk with your computer, you get an exact copy of the data. On the other hand, every time you copy a magnetic tape, you add a little distortion or "tape hiss".

Converting Analog to Digital

So how do you turn natural analog sound into numbers? You need a
sound digitizer like Perfect Sound. Perfect Sound measures and records
the amplitude of a sound. Amplitude is loudness of a sound signal at an
exact moment in time. The process of measuring and recording is referre
to as "taking a sample." To digitize a sound, Perfect Sound takes a series
of samples. A digitizer will take a sample, allow a certain amount of time
pass, take another sample, allow the same amount of time pass, take a
sample, etc. As the samples are being taken, loud sounds are recorded as
larger numbers and quiet sounds are represented by smaller numbers. The
amount of time that passes between samples is referred to as the period.
See Figure 1-1. Assume the period is 1/10,000 of a second. By inverting
the period you can calculate the resulting sampling rate. The inverse of
1/10,000 is 10,000. The sampling rate is 10,000Hz.
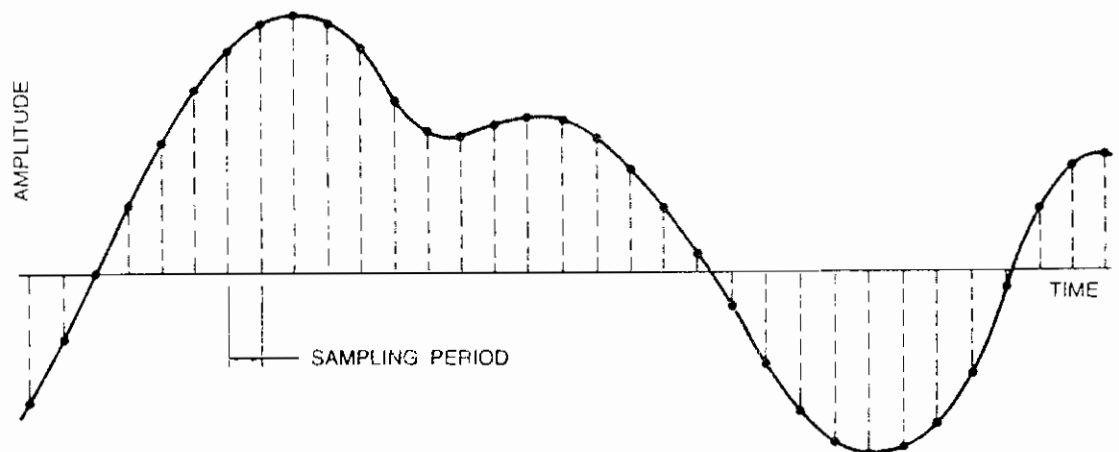
Figure 1-1. Digital Audio Diagram

There is a direct relationship between sampling rate and the maximum
frequency you can record. This relationship, called the "Nyquist
theorem", states that the maximum frequency you can record is equal to
half the sampling rate. Thus, if you sample at 10,000Hz, all frequencies
up to 5,000Hz will be recorded accurately. Frequencies over 5,000Hz wil
not be recorded, in fact, they will introduce distortion into the sound. Thi
distortion is called "aliasing".

The maximum sampling rate your Amiga can play back is 28,000Hz (under normal conditions). Compact Discs always play back at 44,100Hz. This gives CDs a maximum frequency range of 22,000Hz which is outside or on the limits of most people's hearing ability.

The second parameter that determines digital sound quality is the maximum sample value. If we let silence be recorded as zero, what value does the loudest possible sound have? This value is the maximum sample value. Sound will oscillate above and below zero by this amount. On the Amiga, the maximum sample value is 127. Thus all sounds are recorded as numbers between 127 and -127, with zero being silence. For comparison, CD players have a sample range from -32,767 to 32,767. Obviously this gives CDs better sound quality than an Amiga.

The final thing to notice about digital sound is that it uses quite a bit of memory. Since each sample on an Amiga takes one byte, a sampling rate of 10,240 samples per second means that every second of sound is going to take exactly 10K of memory. Recall that 1024 bytes equals one "K", and 1024K equals one megabyte.

Chapter 2 - Installation

Making a Backup

Making backup copies of the Audition 4 original disks should be your first priority. Remember, these copies are for your own personal use only. For your convenience Audition 4 is not copy protected. Software piracy is against the law and it is your responsibility to prevent unauthorized copies.

Never insert or remove a disk from a disk drive while the drive light is on. Damage may occur.

To make a backup of your Audition 4 Program Disk:

1. Boot your Amiga as normal.
2. Make sure your original Audition 4 Program Disk is write protected. (Open the window on corner of the disk.)
3. Insert the Audition 4 Program Disk into the internal drive.
4. Insert an initialized blank disk into your external drive.*
5. Drag the Audition 4 disk icon on top of the blank disk's icon and drop it.
6. Repeat the process for the Sample Disk.

Once you have made a backup of the Program and Sample Disks, store the originals in a safe place.

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* If you only have one disk drive, or if you have any questions about backup copies of disks, consult your workbench manual for Making Backup Copies of Disks.

Hard Drive Installation

To load Audition 4 on your hard drive, just double click the **Install HD** icon and follow the online instructions. Within the Install program you can select to install the program, sample disk, library files, and public domain programs by selecting their names and then clicking **Begin Install**.

To install Audition 4 on your hard drive:

1. Boot your computer as normal.
2. Make sure your Audition 4 Program Disk is write protected.
3. Insert the Audition 4 disk into a disk drive.
4. Double click the Audition 4 Disk icon.
5. Double click the **Install HD** icon, and follow the online instructions.
6. Select which files within Audition 4 you want to copy to your hard drive.
7. Select the destination directory on your hard drive.
8. Click **Begin Install**.
9. Insert the Sample Disk when prompted.

Running Audition 4

To start the Audition 4 program, simply double click the **Audition 4** Program icon. After the program is finished loading, the screen will scrol up from the bottom of your screen. Click the **OK** button to begin. Figure 2-1.
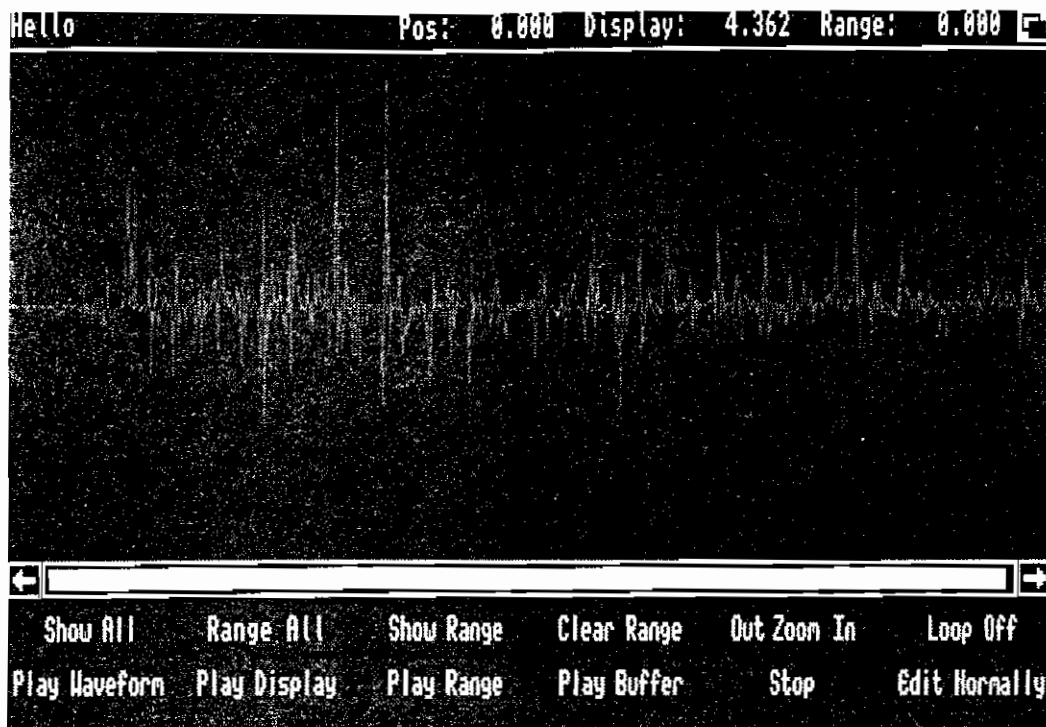
Figure 2-1. Audition 4 Screen

Setting your Sampler Type

To set the program to recognize your sound digitizer, you will need to select your sampler type in the configuration menu. Other options in the menu will allow you to customize Audition 4 to your preference. A complete description of all the options is in Chapter 11 - Configurations. First time installers should select the type of sampler they have and accept the other configuration defaults.

1. Select **Type of Sampler** from the **Configuration Menu.***
2. Select one of the following to classify your sampler:

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* Hold down the right mouse button to view the menu items in the menu bar. The item you want can be selected by moving your pointer to the word Configuration, then down to Type of Sampler. You should then move the pointer over to your type of sampler. To make your selection, release the right mouse button when your sampler becomes highlighted.

Generic*   Any parallel port sampler not listed below.

Perfect 1&2   Perfect Sound Sampler, version 1 or 2.

Perfect 3   Perfect Sound Sampler, version 3.

Perfect Sound   If you are not sure which version of Perfect Sound you have, keep in mind that versions 1 & 2 do <u>not</u> have mic jacks.

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* Generic applies to parallel port samplers only. Audition 4 will <u>not</u> access samplers that connect to the joystick, or the serial port.

Chapter 3 - Getting Started

Loading a Sample

Loading a sample is similar to loading a document file in a word processor. When you select the **Load** option in the **Project** menu, a Load Sound File Requester* will appear and you can select a sound file to load.

The following steps will load the "Hello" sample in the Tutorial directory of the Sample Disk. (You should be working with your backup copy, not the original disk.)

1. Select the **Project** menu.
2. Select **Load - to Window.****
3. Double click **df1:** in the right column. (Assuming the Sample Disk is in your external drive.)
4. Double click **Tutorial (dir)** in the left column.
4. Select the "Hello" sample from the left column.
5. Click **Ok!**.

After you click the **Ok!** button, the computer will load the sample from disk. When the sample has finished loading, its graph will be displayed on the screen and the file name will listed in the title bar.

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* For instructions on using the file requester, see the File Requester Tutorial in Chapter 11 .

** If you prefer to use the keyboard "short cuts", hold down the right Amiga key, (first key right of the space bar), then tap the L key. Within this manual, keyboard shortcuts are indicated by "RA-L", Right Amiga - L.

Title Bar

The title bar is the horizontal bar at the top on the Audition 4 screen. Contained in the title bar is the file name and the following coordinates: **Position, Display** and **Range**. Figure 3-1.

Hello   Pos: 0.000   Display: 4.362   Range: 0.000

Figure 3-1. Title Bar

All coordinates can be expressed in two units: number of samples or number of seconds. To switch between the two units of measure, click on the coordinate in the title bar you want to change. Example: to change the units of Position, click the word **Pos.** and the units will toggle between samples and seconds. (Seconds are always carried to 3 decimal places.)

Pos.: This number is the coordinate of the first sample in the display. Or, if you are marking a range, Position will indicate the location of the beginning point of a range while you hold down the right mouse button.

Display: This number is the length of the waveform in the display. Notice the Display coordinate decreases as you zoom in. Click the word Display to toggle between seconds and samples.

Range: This coordinate indicates the size of the range that is marked. Notice it will update as you resize the range with your mouse. Click Range to toggle between units.

12 Basic Buttons

There are twelve basic tools that will always be available on the screen. (Figure 3-2.) These tools will allow you to play or highlight any area of any waveform. A short description of each button follows:

Show All	Range All	Show Range	Clear Range	Out Zoom In	Loop Off
Play Waveform	Play Display	Play Range	Play Buffer	Stop	Edit Normally

Figure 3-2. Basic Buttons

Show All — Zooms out as far as possible. On larger samples, the entire sample will fill the display window. However, on smaller samples, **Show All** may only graph part of the sample. In these cases, you will need to use the scroll bar to move around in the sample. This irregularity is caused by Audition's fast display subroutines. To maximize screen updates, Audition always displays a multiple of 640 samples.

Play Waveform — Plays the entire sample.

Range All — Creates a range over the entire sample

Play Display — Plays the portion of the sample that is currently in the display window.

Show Range — Enlarges a range to fill the display window. (Zooms in to display a range)

Play Range — Plays the portion of the graph that is highlighted.

Clear Range — Cancels highlighting of a marked range. This is <u>not</u> a delete function. Sample data remains the same.

Play Buffer — Plays the sample that is currently in the buffer.*

Zoom In/Out — Zooms in and out of the waveform providing close up views. (detailed in next section)

Stop — Cancels all of the Play and Try** buttons.

Loop On/Off — A toggle button that will make a sample play continuously if it is on. To toggle between Loop On and Loop Off, click the button until the desired

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* Buffer refers to Audition 4's copy buffer, for more information see page 18.

** Try buttons are detailed in Chapter 5.

option is showing.

Edit Normally/Freehand - If normally is selected, edits are created by using the menus, (cut and copy etc.). If freehand is selected, the display zooms all the way in on a waveform and allows you to draw on the graph witl the mouse. Like the Loop button, you can toggle the Edit button by clicking it until the preferred option is displayed.

Zoom Button

Because Audition 4 is written in Assembly Language, it is capable of a realtime zoom. This means that you can adjust the zoom parameters and you will see the waveform react instantaneously to your commands.

1. Click **Zoom In**.
   The zoom button is divided into two parts: the right and left side. Clicking on the right side of the button (on the word **In**), will cause you to zoom in on your sample. Hold down the mouse button to zoom in realtime.

2. Click **Zoom Out**.
   Clicking the left side of the zoom button (on the word **Out**), will zoom you back out of the sample. Continuously holding the **Zoom Out** button will expand the view to show the entire waveform. **The Show All** button will also accomplish this.

By combining the zoom button and the scroll bar, you can navigate anywhere in the sample and at any level of detail. The horizontal **Scroll Bar** is located at the bottom of the waveform window. Click the arrow on the far right to move the displayed area toward the end of the sample. Hold the arrow down to scroll in real time. You can also drag the slider knob to move to another part of the sample. This is most evident when you have zoomed in on the sample.

An interesting effect can be created by moving the scroll bar while a sample is playing. First, zoom in on a sample (all the way) and select **Loop On**. Then, click **Play Display**. While the sample is looping, move the scroll knob slowly toward the end of the sample.

Selecting a Range

Selecting a Range is accomplished by clicking the left mouse button at the beginning of the desired area and dragging to the desired end.* The selected range will be highlighted as you move the mouse. Click the **Play Range** button to hear the range. If you need to adjust the edges of your range, you can position the cursor on either edge of your selected range, press down the left mouse button and drag the edge of the range to a new position.

To range an entire waveform, click **Range All**.

Recording a Sample

Never attach or remove samplers or other devices from your computer while the power is on. Doing so may damage your computer or the device.

To record a sample, make sure your sampler is set up properly. It should be attached to your Amiga and to a sound source. Refer to your sampler manual for installation instructions. A microphone or any other audio output, such as a CD player, can serve as your sound source. Once the sampler is in place and your audio connections are secure, you are ready to record a sample.

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* Dragging is accomplished by clicking the left mouse button, holding it down as you move the cursor, and then releasing the mouse button.

To record a sample:

1. Select **Delete - Waveform** from the **Project** menu. This gives you a clean slate to start with.

2. Select **Edit 2 - Sampler** (RA-6). This puts the Sampler Control Panel at the bottom of the screen.

3. Check the **Configuration** menu **Type of Sampler**, to make sure your sampler type is selected.

4. Plug an audio source into the sampler's left input channel.

5. Click on the **L** button under the word **Monitor:**. If the sound level is too low, adjust the gain. Perfect Sound 3 Owners: adjust the gain by using the arrow keys. Most other samplers can be adjusted by turning the gain knob on the sampler.

6. Once the gain has been set, click the right mouse button to stop monitoring.

7. Click on the **L** button under the word **Sample:**. A message will appear, **Press left mouse button to start, right to stop.**

8. Click the left mouse button to begin sampling. Once you begin the screen will go black. Do not panic, Audition 4 is recording your sample to RAM. The screen will reappear when you stop sampling

9. To stop the sampler, click the right mouse button. Otherwise, the sample will be recorded to the largest contiguous block of memory available. (This is not necessarily all of your memory.) Sampling will automatically stop when the block is full.

10. Play your sample by clicking **Play Waveform.**

For an in depth look at sampling see Chapter 8 - Sampling Details.

Saving a Sample

To save your sample as an IFF sound file on a floppy disk:

1. Initialize a blank floppy disk.*
2. Insert initialized disk into df1:.
3. Select **Save - Waveform** from the **Project** menu.
4. Type **df1:** next to the word **Drawer.**
5. Type in a name for the sample next to the word **File.**
6. Click the **OK!** button to save it, or click **Forget it** to exit the requester without saving.

Save - Waveform will save your sample in IFF format. For more details on saving and different file formats see Chapter - 9 Saving Sounds and Instruments.

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* To initialize a blank disk, switch to Workbench by clicking the depth gadget, (upper right corner). Put a blank disk into a disk drive and select initialize from the disk menu. Your disk icon must be selected (highlighted) before you can select initialize.

Chapter 4 - Edit 1, Basic Editing

All the following features are found in the **Edit 1** menu, Figure 4-1. They are your basic editing tools of Audition 4. They are equivalent to cut, copy, and paste for a word processor and are generally as straightforward.

```
┌─────────────────────┐
│ EDIT 1              │
│ Delete Range    ⌘D │
│ Keep Range      ⌘K │
│ Copy Range      ⌘C │
│ Zero Range      ⌘Z │
│ Overwrite       ⌘O │
│ Cut Range to       │
│ Insert from        │
│ ─ ─ ─ ─ ─ ─ ─ ─ ─ │
│ Add Workspace      │
└─────────────────────┘
```
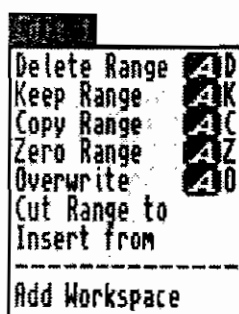
Figure 4-1. Edit 1 Menu Options

Delete Range

Delete Range removes a range from your sample. Delete a range by highlighting a range on the graph and then select delete range from the **Edit 1** menu. **Warning: This process is irreversible.** If you are editing a stereo sample and you delete a range from only one channel, be aware that the channels will not be in sync following the delete. If you need to delete from only one of the channels and keeping them in sync try the zero range option. For more on stereo editing see the related section at the end of this chapter. The keyboard shortcut for Delete Range is RA-D.*

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* Keyboard short cuts are provided for most Edit Functions. To select an edit function from the keyboard, hold down the right Amiga key (first key right of the space bar) and type the "short cut" letter or number.

Keep Range

The **Keep Range** function works opposite to delete. In **Keep Range** you highlight what you want to keep. Anything not ranged will be deleted. **Warning: This process is irreversible.** If you choose Keep Range with a stereo sample and select the Right or Left channel, the kept range will be moved to the beginning of the waveform and be followed by zeros until the end of the sample (equivalent to silence). Channels will remain the . same length, but they will be out of sync. Keyboard shortcut: RA-K.

Copy Range

Copy Range will copy the highlighted range to the buffer.* The original waveform will not be affected; however, the range will replace anything that was in the buffer. The copied range will be stored in the buffer until it is replaced by another file or range. To view or edit the buffer, you can swap the main display with the buffer using the **Swap Buffer & Main** option in the **Edit2** menu. The keyboard shortcut for Copy is RA-C.

Zero Range

The **Zero Range** function will replace the value of the ranged part of a sample with zeroes. A zero translates to silence. This can be used with a stereo waveform to clear a range of one of the channels, while keeping both in sync. **Warning: This process is irreversible.** Shortcut: RA-Z.

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* The buffer is equivalent to a clipboard in word processors. It acts as a temporary storage area.

Overwrite

The **Overwrite** function is used to replace a displayed area with the waveform in the buffer. Click a cursor point on the graph to indicate where you want the buffer to begin replacing. If you indicate a range, overwrite will begin at the start mark. The overwrite will continue until the end of the buffer or waveform is reached. Keyboard shortcut: RA-O.

Cut Range to -

Cut Range moves the highlighted range to either the buffer or a file. If **Cut Range to - Buffer is** selected, the range will be deleted from the original sample and moved to the buffer. The keyboard shortcut is RA-X. When you **Cut Range to - File**, a Save IFF Requester will appear for you to save the range as an IFF File.

Insert from -

Select **Insert from - Buffer** to insert the entire buffer into the displayed sample. First, click a cursor point on the graph where the insert should go and then select **Insert - Buffer**. If you have a range selected, the start mark of the range will act as the insert point. The keyboard shortcut for Insert from - Buffer is RA-I.

Insert from - File will bring up the Load to Window File Requester. You can insert an entire file into the displayed sample.

Add Workspace

Add Workspace allows you to insert a period of silence at a cursor point Or, if a range is marked, a Workspace will be added at the start mark of the range. You can choose between 1, 5, or 10 second Workspaces. The are often useful when creating manual effects.

Stereo Editing

If you are editing in the stereo mode*, every time you select an **Edit 1** option you will see the channel selection requester, Figure 4-2. This requester prompts you to select which channel to edit. Your editing function will only have an effect on the selected channel(s).

Figure 4-2. Channel Selection Requester

When a sample is loaded in the stereo mode, many of the functions may cause your stereo sample to become out of sync if the edits are performed on only one channel. For more information on the stereo mode see Chapter 12 - Configuration.

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* To edit in stereo mode, activate **Stereo Mode** in the **Configuration** menu.

Chapter 5 - Edit 2, Advanced Editing

When the first 8 options in the **Edit 2** menu (Figure 5-1) are selected, custom "control panels" appear below the 12 basic buttons. These control panels will increase your editing capabilities beyond simple menu edits. The control panels are generally made up of slider gadgets and buttons. The combination of which will enable you to achieve a variety of effects.
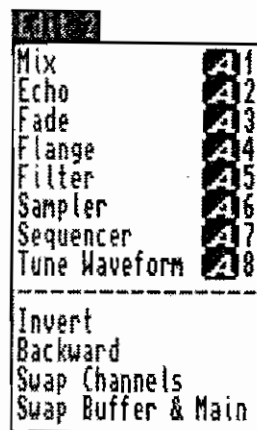
Figure 5-1. Edit 2 Menu Options

Many of the **Edit 2** options offer a **Try Button**. This one button makes fine tuning incredibly easy. By clicking on the **Try Button**, you will preview the selected effect. You can try out a new effect without altering your original sample. While you are listening to the temporary effects, adjust the parameters in the sliders and hear the results instantaneously. While using the try option you may find it convenient to turn **Loop On** and adjust the variable sliders while the sample plays continuously.

Mix

The combination of two samples overlaid on one another is referred to as mixing. A mix effect is common among most digital editors. But, with Audition 4's unique "try mode" and "mix box", mixing becomes quick and powerful.

A mix is performed between two samples: the displayed sample and the · sample in the copy buffer. To combine three samples, first mix two samples and then add in the third.

Before mixing make sure that the two samples have the same sampling rates. Different sampling rates combined in a mix can cause unexpected results. To adjust sampling rates, see Tune Waveform, page 38.

There are two ways to perform a mix:

1. **In the Try mode:** Click the Mix Range button.
   The mix volumes remain constant based on the sliders and mix knob positions.
2. **In the Manual mode:** Click the mix knob* in the mix box.
   The mix volumes can be altered in realtime as the samples are playing by moving the mix knob.

Use the mix control panel, Figure 5-2, to accomplish either of these mixes. The mix control panel includes 4 buttons.

Figure 5-2. Mix Control Panel

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* Mix Knob - the little circle in the Mix Box.

Try Mix

This button is different from most Try buttons because it toggles between two modes: Manual and Try. When Try is selected you can hear the mix which is selected by the slider gadgets or by clicking on the mix knob. It is called try because you are not altering your original samples. While listening to the temporary mix, you can adjust the parameters in the mix box or the sliders and hear the results instantaneously. If the **Loop On/Off** button is set to **Loop On** the sample will play repeatedly while you adjust the mix volumes.

Manual Mix

When the **Manual Mix** is selected, you actually perform a mix on your sample every time you click the mix knob. It is different from Mix Range because the mix volumes can be altered as the samples are playing. But keep in mind that the samples are altered as soon as you click the mix knob. This is not a try function.

Mix Range

After you have fine tuned the desired mix with Try Mix, Mix Range will execute the mix that is represented in the slider gadgets and the mix box. You may want to back up your original samples before you Mix the Range. After you Mix Range, your samples are permanently combined. To mix a stereo sample, click Mix Range twice: once while the channel button is on left, and again while it is on the right. Keep all the parameters the same for an identical mix on both channels.

Right / Left Channel

Mix is executed one channel at a time. The left / right button is provided to switch you between channels. Click the button to toggle between the two channels.

NOTE: Although you may have a stereo sample loaded, when you click the mix knob, you will only hear the channel that is selected on the left / right button. The audio will be playing from both outputs, but remember you are hearing the mix from only one channel.

Exit Mix

Click this button to remove the mix control panel. The control panel will also be removed if you select another Edit 2 option that requires a specific control panel. Only one control panel can be displayed at once.

Mix Box

The mix box is a graphical representation of the combination of two samples. The mix box is structured so that the volume of the buffer is on the vertical axis and the volume of the displayed waveform is on the horizontal axis. Figure 5-3.
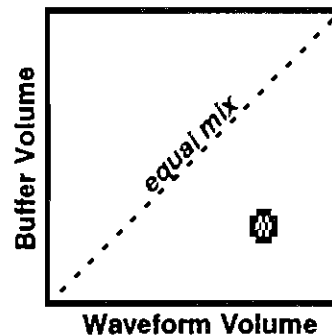

Figure 5-3. Mix Box

This means that when the mix knob is along the dashed line, you will hear an equal mix of both samples. As you move the knob up the diagonal, the volume for both samples will increase. And, as you go down the diagonal, volumes will decrease. Click and hold the mix knob to hear the mix play.
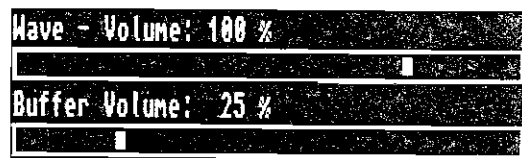

Figure 5-4. Mix Control Panel Sliders

Wave and Buffer Volume

There are two slider gadgets in the Mix Control Panel - wave volume and buffer volume. (Figure 5-4) These sliders will increase or decrease the volume of your samples before mixing. The number chosen is a percentage of the original volume of the sample. You can boost volume by setting the slider controls to a number greater than 100%. In the **Manual Mix** mode, as you move the mix knob in the mix box, the sliders will update to the current setting. The sliders and the mix box set the same parameters, only the graphical representation is different.

Voice Over - *A Mix Tutorial*

Mix is often used to add a voice sample over a music sample. A short tutorial on a music and voice mix follows.

1. Load the "MusicMix" sample to the buffer, and "VoiceOver" to the window. Both samples are in the Tutorial directory on the Sample Disk.
2. Select **Edit 2 - Mix**.
3. Select the **Try Mix** button. (Try/Manual Mix is a toggle button, click the button until it reads Try Mix.)
4. A mix will occur between an entire buffer and a range of the sample displayed in the window. To range the entire voice sample, click **Range All** after loading.*
5. Click and hold the mix knob. Listen to the mix that is described in the volume sliders.
6. Move the mix knob so that the Waveform Volume is about 100%, and the Buffer Volume is about 25%. This will result in the voice sample playing at full volume while the music sample plays softly in the background.

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* Mixing will occur until either the buffer or the displayed waveform ends.

Echo

When you select the **Edit 2 - Echo** function, the echo control panel will appear below your 12 basic buttons. The six echo buttons on the right are as follows: See Figure 5-5.
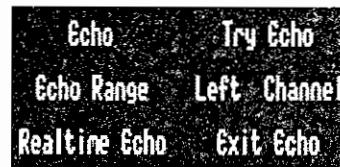
Figure 5-5. Echo Control Panel Buttons

Echo / Delay
Click this toggle button to switch between echo and delay. In echo you will hear many repeats after the original sound is played. With a delay, there is only one repeat.

Try Echo
This is the button that revolutionizes echoes. Click on this button and you will hear the echo that has been selected in the slider gadgets. It is called Try, because you are not altering your original sample. You are just trying an echo out. While you listen to the temporary echo, you can adjust the parameters in the sliders and hear the results instantaneously. By selecting Loop On, your sample will repeat as you alter the delay and the volumes.

Echo Range
After you have fine tuned the desired echo with Try Echo, Echo Range will execute the final echo. You may want to back up your original sample before you Echo the Range. After you Echo Range, your sample will have a permanent echo. To create identical echoes on a stereo sample, click Echo Range twice: once while the channel button is on left,

and again while it is on the right. Keep all the parameters the same for identical echoes.

Right / Left Channel

Echo is executed on one channel at a time. The left / right button is provided to switch you between channels. Click the button to toggle between the two channels.

NOTE: Although you may have a stereo sample loaded, when you click the try button, you will only hear the channel that is selected. The channel will be playing from both outputs so remember that you are hearing the echo off only one channel.

Realtime Echo

For this option to run, you must have your sampler plugged into the parallel port. For more information on real time effects see Chapter 6 - Realtime Effects.

Exit Echo

Click this button to remove the echo control panel. The echo control panel will also be removed if you select another Edit 2 option that requires a specific control panel. Only one control panel can be displayed at once.

Echo Parameters

An echo has three parameters: Echo Delay, Echo Volume and Main Volume. They are all represented in the control panel by slider gadgets. Figure 5-6.
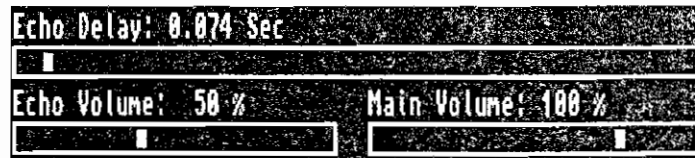
Figure 5-6. Echo Control Panel Sliders

Echo Delay

Echo delay refers to the amount of time that passes between repeats of the sound. Keep in mind that short samples will require small delays. A sample that is 1 second long will probably require an echo less than .250 seconds. You will notice that small echoes, less than .1 second will introduce a metallic sound, like speaking into a tin can. Larger delays like .5 to 1.0 seconds can produce effects like an echo canyon. The maximum delay that Audition will allow is 2 seconds.

Echo Volume

This will set the volume of the successive echoes. If set at 50%, each successive repeat will have 50% of the volume of the previous portion.

If the Echo Volume is less than 100%, each successive repeat will be a fraction of the previous portion. The following diagram, Figure 5-7, is an example of an echo that has a echo volume of 50%. The original wave (highlighted) is at full volume. The second wave is reduced 50%, the third wave is reduced 25% etc.

Figure 5-7. Echo Volume: 50%

Main Volume

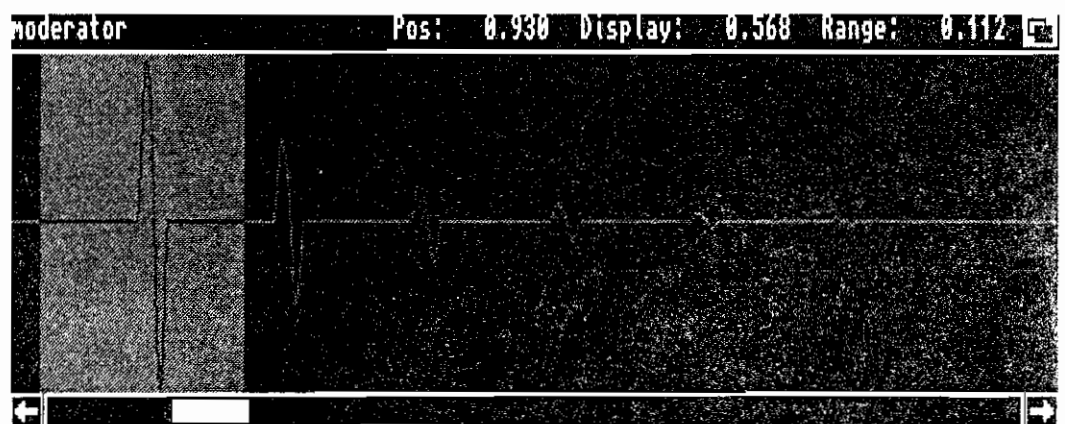Main Volume will increase or decrease the volume of the original sample before executing the echo. The number chosen is a percentage of the volume of the original sample. You can boost the volume of the original sample by setting the main volume greater than 100%.

Fade

The ability to have a sample fade in from silence or fade out is available in the Edit 2 - Fade option. When the fade option is selected the fade control panel will appear below your basic buttons. The six buttons on the right are as follows: See Figure 5-8.
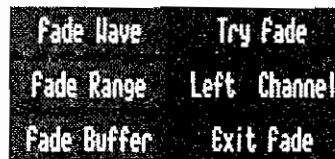
Figure 5-8. Fade Control Panel Buttons

Fade Wave, Range and Buffer

All three buttons function the same except they create fades on different parts of a sample. After you have fine tuned the desired fade with Try Fade, Fade Wave will execute the fade described by the slider gadgets. You may want to back up your original sample before you fade the wave. After you Fade Wave, your sample will have a permanent fade. To create identical fades on a stereo sample, click Fade Wave twice: once while the channel button is on left, and again while it is on the right. Keep both slider parameters the same for identical fades.

Try Fade

Click this button to hear the fade that is selected by the slider gadgets. It is called Try, because it will not alter your original sample. You can just try it out. While you are listening to the temporary fade, you can adjust the parameters in the sliders and hear the results instantaneously. Click the Loop On button to have the sample play continuously while you are adjusting parameters.

Right / Left Channel

Fade is executed on one channel at a time. The left / right button is provided to switch you between the channels. Click the button to toggle between the two channels.

NOTE: Although you may have a stereo sample loaded, when you click the try button, you only hear the channel that is selected. The channel will play from both outputs, so remember you are hearing the fade on only one channel.

Exit Fade

Click this button to remove the Fade control panel. It will also be removed if you select another Edit 2 option that requires a specific control panel. Only one control panel can be displayed at once.

Fade Parameters

A fade has two parameters: Start Volume and End Volume. They are both represented in the control panel by slider gadgets. Figure 5-9.
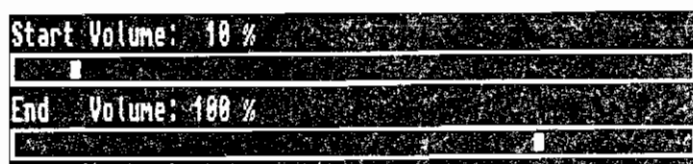

Figure 5-9. Fade Control Panel Sliders

Start and End Volume

These volumes are a percentage of the original samples volume. They vary between 0 and 128%. If the Start Volume is less than the End Volume, the sample will fade in. If the Start Volume is greater than the End Volume, the sample will fade out. Setting the Volumes to the same number will cause the sample to be scaled. If both volumes are set to 125% the sample will be boosted by twenty-five percent. A sample can be scaled down by setting the volumes to a number less than 100%.

Stereo Pan - *A Fade Tutorial*

A popular use for fading is to create a panning effect with a sample. A pan is the effect heard when a sound is first heard from one channel and then switches to another channel. This is accomplished by creating a decreasing fade on one channel and an increasing fade on the other.

In the following tutorial you create the effect of a car starting on the left side of you and driving right past you and down the road. Even though the original sample is mono, you can create stereo effects by using the stereo mode.

1. Load "CarStart". It is in the Tutorial directory on the Sample Disk.
2. Activate the **Stereo Mode** in the **Configuration** menu.
3. Select **Edit 2 - Fade.**
4. Select the **Left Channel** button.
5. Put the start volume on 125%.
6. Put the end volume on 25%.
7. Click **Fade Wave.**
8. Select the **Right Channel** button.
9. Put the start volume on 50%.
10. Put the end volume on 120%.
11. Click the **Fade Wave**

12. Click **Play waveform** to hear the car start and drive by. For best results use stereo headphones.
13. To reverse the path of the car, have it drive from right to left: click **Range All**, and then select Swap Channels from the Edit 2 Menu.

Flange

A flange is similar to a delay. The difference between a delay and a flange is that a flange varies the delay time while the sound is playing. Delay time is always getting shorter or longer. The result of a varying delay time, is pitch shifting. Pitch shifting is useful for doubling effects.*

When you open the flanger control panel you will notice six buttons and two sliders. See Figure 5-10.
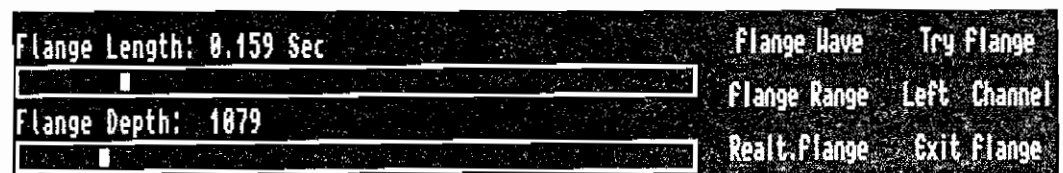
Figure 5-10. Flange Control Panel

Flange Wave / Flange Range

After you have achieved the desired flange effect with Try Flange, the Flange Wave button will execute the flange described in the sliders. You may want to backup your original sample because this function permanently alters the sample in memory. To create identical flanging on a stereo sample, click Flange Wave twice: once while the channel button is on left and again while it is on right. Keep the parameters the same for identical flanging. If you click the **Flange Wave** button, the flange effect

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* Doubling - The effect achieved when a sample is played twice in rapid succession.

will be added to the entire sample, but if you click the **Flange Range** button the flange effect will only occur on the marked portion of the wave.

Try Flange

Click on this button to hear what the flange will sound like before altering the original sample. It does not alter the original sample. You are just previewing it. To alter the flange, make adjustments to the sliders and click the Try Flange button to hear the new flange.

Realtime Flange

This button allows you to perform flange effects in realtime. For this option you must have a sampler plugged into the parallel port. For more information on realtime effects consult Chapter 6 - Realtime Effects.

Left Channel / Right Channel

Because the Flanger is executed on one channel at a time, the left/ right button is provided to switch between channels. Click the button to toggle between the two channels.

Exit Flange

Click this button to remove the flange control panel. The flange control panel will also be removed if you select another Edit 2 option that requires a control panel. Only one control panel can be displayed at once.

Flange Length

This button controls the period of a flange effect. Period refers to the amount of time it takes to complete one cycle of the effect. Using a small value for this parameter produces a short wavering effect, while larger values produce a slow cycling effect. Dedicated flanger devices sometimes refer to this parameter as 'Speed'.

Flange Depth

This parameter controls the time difference between the shortest and the longest delay times. A small value will cause the difference to be small, making a chorusing or phasing sound. A large value will cause this difference to be large, producing an effect with extensive pitch shifting. Dedicated flanger devices refer to this parameter as 'Depth'.

While experimenting with flanges, you may want to try the following · flange values (Figure 5-11) on the "Moderator" sample, located on the Sample Disk.

Description	Modulation	Pitch Shift	Phasing (Flange)	Wacky (Chorus)	Doubling
Flange Length	0.212	0.044	1.000	1.000	0.283
Flange Depth	10134	10134	126	1034	2703

Figure 5-11. Suggested Flange Settings for "Moderator"

Filter

A filter screens out a certain frequency range in a sample and allows desired frequencies to play through. Audition 4 allows you to use four different type of filters: Lowpass, Highpass, Bandpass, and Bandbarrier. They can be selected in the control panel by highlighting a button. Figure 5-12.

Frequency : 1653 Hz   Filter Wave   Try Filter

Filter Range   Left Channel

Lowpass   Highpass   Bandpass   Bandbarrier   Realt.Filter   Exit Filter

Figure 5-12. Filter Control Panel

Lowpass Filter

Lowpass refers to the frequencies allowed to pass through the filter. In other words, a Lowpass filter removes high frequencies. This is illustrated in figure 5-13.

Highpass Filter

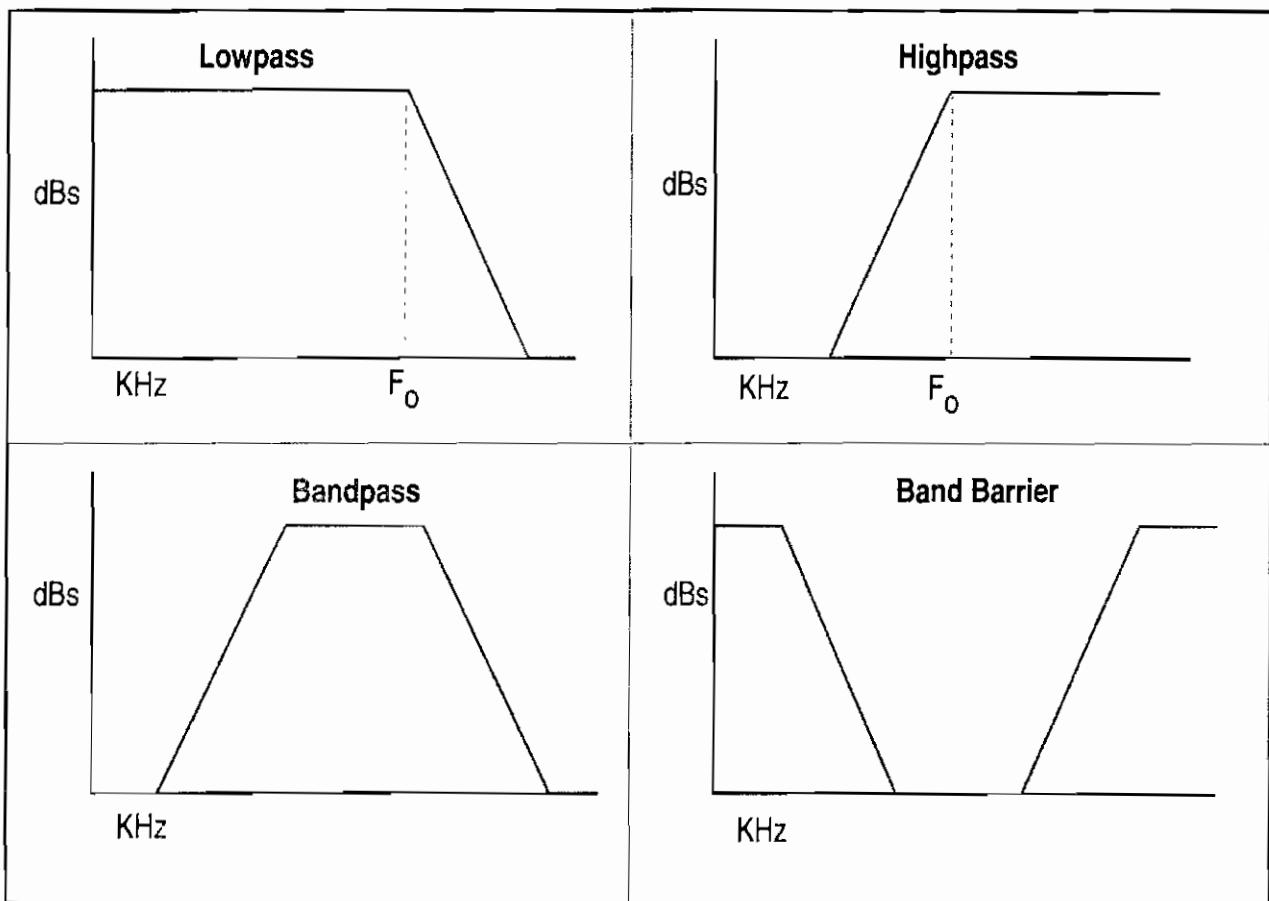This is just the reverse of the low pass filter. The high pass filter removes low frequencies in a sample.

Figure 5-13. Filter Diagrams
The above diagrams graph Frequency (KHz) vs. Attenuation (dBs).
F_0 refers to the adjustable cutoff frequency that is selected with the slider gadget.

Band Pass Filter

Band Pass refers to a filter that removes the frequencies above and below the designated frequency range. In other words, it allows a band of frequencies to pass through the filter.

Band Barrier Filter

Band Barrier is the inverse of Band Pass. With Band Barrier, you can select a frequency range to be removed from a sample. That is, Bandbarrier will allow frequencies above and below a band to be passed.

Filter Frequency

The frequency gadget is the adjustable parameter in the filter control panel. (Figure 5-14.) It controls the cutoff frequency. Click the knob and slide it to the desired frequency. Notice that the maximum cutoff frequency changes from sample to sample. The maximum filter frequency is always equal to half of the sampling frequency. So if you sampled at 10,000Hz, your maximum cutoff is 5,000Hz. Audition 4 automatically calculates the maximum filter frequency for each sample.

Figure 5-14. Filter Frequency

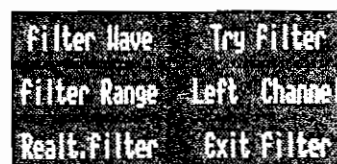The remaining control panel buttons (figure 5-15) work similarly to their echo and fade counterparts.

Figure 5-15. Filter Control Buttons

Try Filter

Click on this button to hear the filter with the selected parameters. Your original sample is not being altered. While you are listening to the temporary filter, you can adjust the filter frequency on the slider and hear the results instantaneously. The new filter takes effect when you <u>release</u> the frequency knob. Click the Loop On button to have the sample play continuously while you adjust the filter frequency.

Filter Wave and Range

After you have fine tuned the desired filter frequency with the Try button, Filter Wave performs the filter on your sample. You may want to back up your original sample before you Filter the Wave or Range. After filtering, your sample will be permanently altered. To execute identical filters on a stereo sample, click Filter Wave twice: once while the channel button is on left, and again while it is on the right. Keep all the parameters the same for identical frequency cutoffs.

Right / Left Channel

Filter is executed on one channel at a time. The left / right button is provided to switch you between channels. Click the button to toggle between the two channels.

Although you may have a stereo sample loaded, when you click the try button, you will only hear the channel that is selected. The sample will be playing from both outputs so remember you are hearing the output from only one channel.

Realtime Filter

For this option to run you must have your sampler plugged into the parallel port. For more information on real time effects see Chapter 6 - Realtime Effects.

Exit Filter

Click this button to remove the filter control panel. The filter control panel will also be removed if you select another Edit 2 option that requires a specific control panel. Only one control panel can be displayed at once.

Sampler

Due to the complexity of this feature, an entire chapter has been dedicated to sampling. Please see Chapter 9 - Sampling Details

Sequencer

Due to the complexity of this feature, an entire chapter has been dedicated to sequencing. Please see Chapter 8 - Sequencing

Tune Waveform

With Tune Waveform you can adjust the playback speed and the "recorded" sampling rate of a sample. By adjusting the playback speed you can slow a sample down or speed it up (The Chip & Dale Effect). Altering the "recorded" sampling rate after your sample has been recorded is also possible. However, it is best to use the correct rate when recording the sound, if possible. Sampling Rate adjustments are generally required when creating IFF Instruments.

When you select **Edit 2 - Tune Waveform**, the tune control panel (Figure 5-16) will appear below your 12 basic buttons. These gadgets allow you to alter the pitch or the sampling rate of a sample.
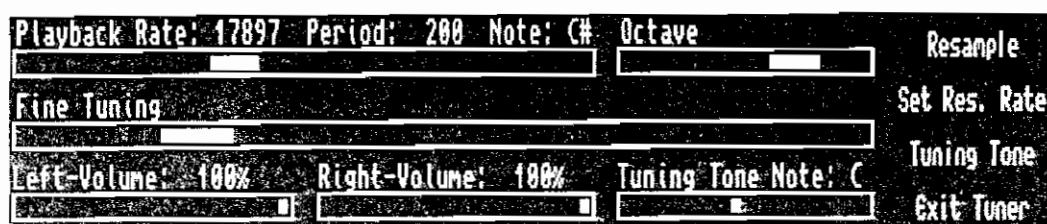
Figure 5-16. Tune Waveform Control Panel

Resample

With this button, you change the sampling rate of a sound file. Resample can be used to conserve memory. If you have a sound file that is too large for your application and you can't trim the length of it, try resampling at a lower sampling rate. This will cause the sample to use less memory, however it will reduce the playback fidelity. You should never resample to a higher sampling rate. Resampling to a higher sampling rate uses more memory to reproduce equivalent audio quality. It does not improve the sound quality.

Set Res. Rate/ Set Play Rate

This button toggles between Set Resampling Rate and Set Playback Rate. You should be familiar with the differences between the two rates.

Playback Rate determines the frequency or pitch of a sample. If you increase the playback rate, the pitch of the sample will go up. Conversely, if you lower the playback rate, the pitch will go down. The playback rate is adjusted by selecting the octave, note, or fine tuning sliders.

Sampling Rate refers to the "recorded" sampling rate. That is the rate at which the sample was recorded. In Audition 4 this parameter is set in the sampler control panel. Once the sample has been recorded, the original sampling rate is automatically used as the playback rate. All IFF files automatically playback the sound at the same rate they were saved with. The playback rate is the same as the sampling rate unless the playback rate is adjusted. After you resample, the IFF file will playback at the new sampling rate.

In summary, when you adjust the Playback Rate you alter the speed at which a sample plays. When you adjust the Resampling Rate you change the rate at which the sound was sampled. (If the new sampling rate is lower than the original rate, the file becomes smaller.) When you resample, your playback speed will automatically change to match the new sampling rate.

The period listed next to the sampling and playback rate is provided for· programmers.

Tuning Tone

By activating the tuning tone button, you can cause Audition 4 to emit a continuous tone at a desired note. The Tuning tone slider will select which note will be played when the tuning tone button is activated. This tone is used as a reference when you are creating instruments. Turn off the tuning tone by clicking the Tuning Tone button.

Tune Parameters

The following three sliders (Figure 5-17) will allow you to adjust the sampling and playback rates, depending on which mode is selected.
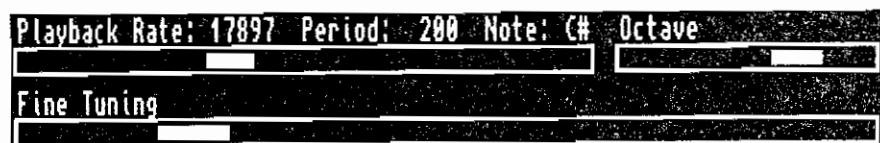

Figure 5-17. Octave, Note, Fine Tuning Sliders

Octave

The octave slider is a rough adjustment for pitch. This slider either doubles or halves the playback rate of the sample. Doubling the playback rate increases the pitch of a sample by one octave; halving decreases the pitch by an octave.

Note

The Note slider raises and lowers a sample's pitch by notes. It is an intermediate adjustment of pitch. The note slider is directly above the fine tuning slider. Keep in mind that the displayed note does not always correspond to the sample's pitch. The note will only match the pitch if the sample was recorded at middle C and at a sampling rate of 8363Hz.*

Fine Tuning

The Fine Tuning slider gives you precise control over the frequency of a sound. Combine this slider with the Tuning Tone gadgets to tune your instruments.

Left and Right Volume

These sliders set your output volume. They are not intrinsically related to tuning. If you want to adjust the audio level on one of your channels at any time within Audition 4, you can adjust these sliders in the Tune Waveform Control Panel.

Exit Tuner

Click this button to remove the tune waveform control panel. The control panel will also be removed if you select another Edit 2 option that requires a specific control panel. Only one control panel can be displayed at once.

IFF Instruments - *A Tune Waveform Tutorial*

Tune Waveform is of paramount importance when creating IFF Instrument files. All IFF instruments for the Amiga must play back at a sampling rate of 8363Hz** and be tuned to the musical note 'C'. Under the

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* If the sampling rate was 16,726Hz, the displayed note will be off by one octave.

** The standard frequency for IFF instruments files is 8,363Hz, although some music programs will allow you to use samples that are sampled at 16,726Hz. When possible, you should use 16,726 Hz because it produces higher quality samples.

most ideal circumstances, you should tune your instrument to middle C and sample the sound at 8363Hz. Because this is not always possible, you can adjust a prerecorded sample to 8363Hz and middle C by using the tune waveform control panel.

The following tutorial will take you through a step by step conversion of a sound to be converted to an IFF Instrument.

1. Load "TuneMe". Located in the Tutorial directory of the Sample Disk.
2. Select **Edit 2 - Tune Waveform.**
3. Click the **Set Res. Rate** button until "Playback Rate" appears above the Note slider.
4. Highlight the **Tuning Tone** button by clicking it.
5. Set Tuning Tone Note to middle 'C'. The slider knob should be in the middle of the slider for <u>middle</u> C.
6. Activate **Loop On** and click **Play Waveform** to play the sample continuously.
7. You are now hearing your sample and a continuous middle C tone. Adjust the Octave, Note, and Fine Tuning sliders to change the pitch of the sample so it is in tune with the Tuning Tone. You must do this by ear. If your ear boarders on the side of tone deafness, here's a hint -- try about 12,175Hz.
8. Select the **Set Play Rate** button until it says "Resample Rate" above the Note slider.
9. Adjust the Octave, Note, and Fine Tuning sliders so the resampling rate is set to 8,363Hz.
10. Select the **Resample** gadget to change the sampling rate and tuning of the instrument sample.
11. Select **Save Instrument - IFF 1 Octave** from the **Project** menu to store the instrument as an IFF Instrument file.

More EDIT 2

The following four edit options do not require control panels. They operate like the Edit1 options. You simply highlight a range and select the option from the menu to execute the edit.

Invert

The invert option is provided to allow you to invert the phase of a waveform. When you invert a waveform, you will be flipping the waveform about the x-axis. See Figures 5-18 and 5-19 for an illustration of phase inversion.
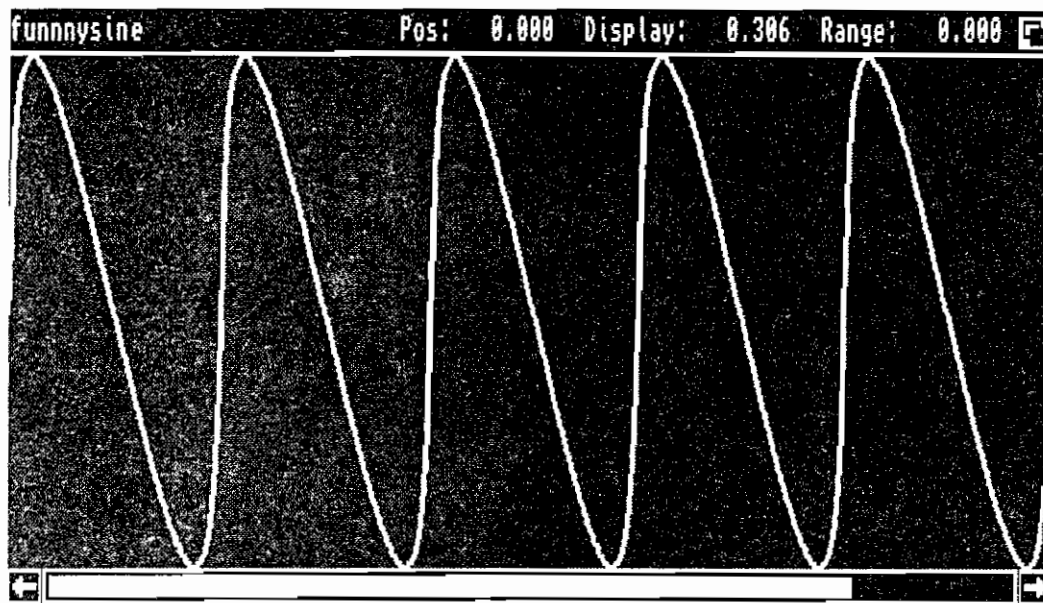

Figure 5-18. Phase, before Inversion

Phase inversion is useful when two ranges are combined either in looping or inserting. The connection between the two ranges can sometimes be choppy because the end of the first range is increasing, while the beginning of the next range is decreasing. This type of joint can cause an audible click in your sample. If you invert the second range (change the beginning decrease to an increase), your waveform connection will blend more smoothly and sound better. The keyboard shortcut for inverting a range in RA-V.
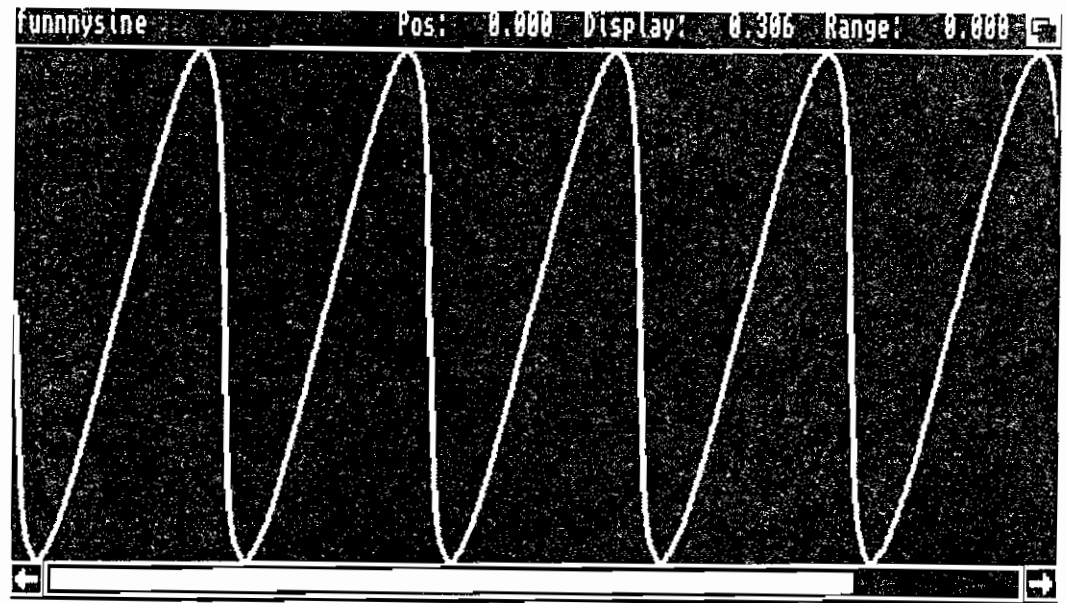
Figure 5-19. Phase, after Inversion

Backward

The backwards function will reverse the sampling of a range or the buffer. This is most often used for tracking down back masking on notorious albums. However, reversing conventional instruments can create very interesting effects. The keyboard shortcut for reversing a range is RA-B.

Swap Channels

Select Swap Channels when you want to switch the left and right channels of a sample. Select **Range** or **Buffer** to indicate which channels to swap. To swap the entire channels of displayed sample. Range the entire sample before selecting **Swap Channels - Range**. A Swap Channels application is detailed in the Fade Tutorial, Stereo Pan. Keyboard shortcut: RA-N.

Swap Buffer & Main

If you would like to view or edit the buffer waveform, select this option to switch the buffer with the displayed sample.

Chapter 6 - Realtime Effects

Audition 4 has more realtime features than any other sound editor for the Amiga. Realtime effects are special effects that occur on "live" signals. They are not recorded or performed on pre-recorded samples. Provided you have a parallel port sampler, all of the following realtime effects can be performed on your Amiga.

To activate any realtime effect you should first make sure your sampler is plugged into the parallel port and all audio connections are in order. Refer to your sampler's manual for more details.

Realtime Editing Effects

Within the Edit2 menu; **Echo, Delay, Flange** and **Filter** have realtime capabilities. To activate the above realtime effects you should bring up the associated control panel. Realtime Delay is in the Echo control panel.

To create a realtime echo, select **Edit2 - Echo**. When the control panel appears, click on the Realtime Echo button to begin echoing in realtime. If you have a microphone plugged into your sampler, speak into the mic to hear the realtime echo.

You will notice that when a realtime effect is selected. A message will appear informing you to click the right mouse button to stop the realtime effect. While this notice is on the screen, you cannot use the mouse to adjust the effect's parameters. However, on some effects the parameters can still be adjusted by keyboard.

During Realtime Echo and Delay,
- Echo Delay is adjusted with the left and right arrow keys.
- Echo Volume is adjusted with the up and down arrow keys.

During Realtime Filter
- · Frequency is adjusted with the left and right arrow keys.
- · Filter Type is selected by typing the corresponding number on the key pad.

> 1 - Lowpass
> 2 - Highpass
> 3 - Bandpass
> 4 - Bandbarrier

To cancel any realtime effect click the right mouse button.

Realtime Mix

Within the sampler control panel, you can record directly into a prerecorded sample. After you adjust the volumes of both samples, you can begin mixing into the original sample in realtime. For more information see Chapter 9 - Sampling Details.

Realtime Meters

The Oscilloscope and VU Meters can be viewed by enabling them in the configuration menu.

To activate the Oscilloscope:
1. Check to see if the Oscilloscope is already activated. (Is there a check mark to the left of the word oscilloscope in the Configuration menu?)
2. If not, activate the scope by selecting the Oscilloscope option.
3. As audio is input into the sampler, your oscilloscope will measure the amplitude of the sound in realtime, as well as measure prerecorded samples as they play back.

The VU Meter operates in the same fashion; however, it displays the average amplitude of the sound. For more on Meters see Chapter 12 - Configuration.

Chapter 7 - Special Editing

Smooth

The smoothing function is a type of low pass filter with the cutoff frequency automatically set to a function of the sampling rate. Smoothing is a quick process that will remove unwanted high frequencies. For more precise filtering, bring up the filter control panel by selecting the **Edit2 - Filter** option.

Maximize

Maximize scans the selected range, determines the highest amplitude, then scales the range to the maximum volume allowed for on the Amiga. This is useful for boosting the playback level of a sample if your gain was not set properly when it was sampled. If it is possible, you should sample the sound again with a higher gain setting.

Centralize

Centralize scans the selected range, determines the DC offset, and then corrects for it. Ideally your waveform should be centered at 0 on the y-axis. If you find your sample centered above or below that line, you should select the centralize option to center the waveform, removing the DC offset. It is especially important to remove the DC offset when you intend to mix many samples. See Figures 7-1 and 7-2 for an illustration of a sample before and after centralizing.
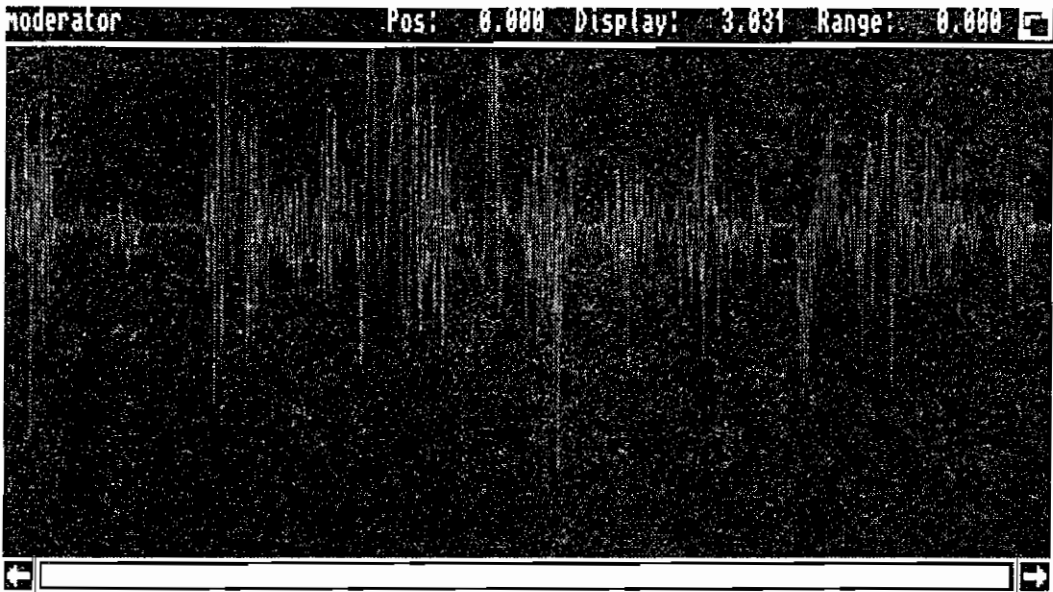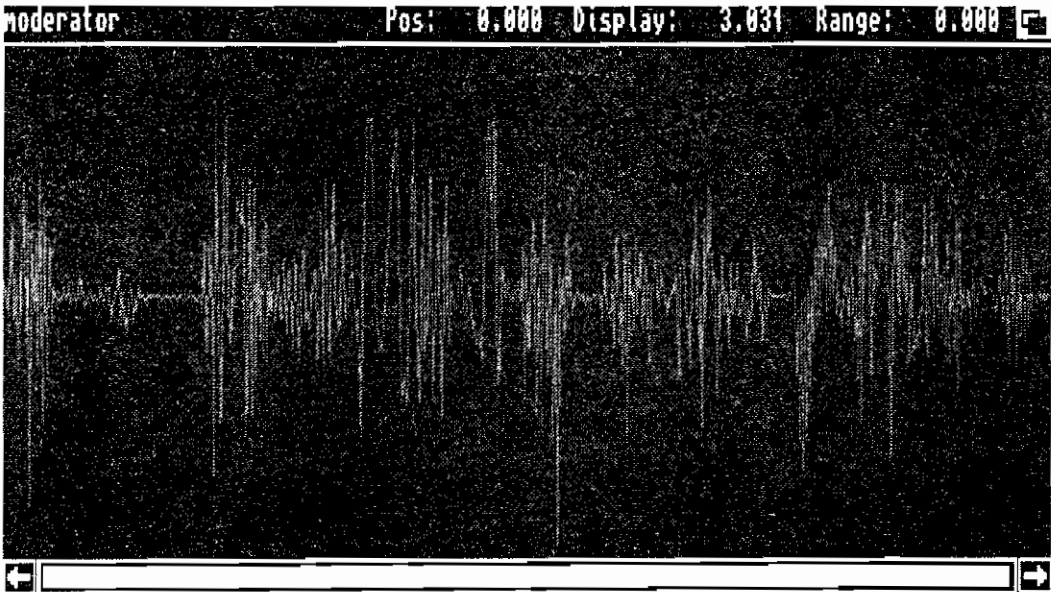
Figure 7-1. DC Offset

Figure 7-2. Centralized Waveform

Lift Treble

Lift treble, performs a high-pass filter operation on your ranged data, then adds the result to your range. The effect on your sample will be similar to the effect created by increasing the treble on your stereo.

Lift Bass

This function operates similar to the **Lift Treble** function; however, the **Lift Bass** operation adds the result of a low-pass filter, rather than a high-pass filter.

Chapter 8 - Sequenced Sounds

The sequencer portion of Audition 4 allows you to create multiple loop points within a sample. This gives you the ability to create entire songs even when lack of memory would normally prevent it. This is accomplished by looping through repeated sections. For example, if you wanted to digitize a song that consisted of two verses and a single chorus repeated three times, you could save the chorus once and play it back after every verse. You would not waste memory by digitizing the same chorus three times.

When you select the **Edit 2 - Sequence** menu option, the sequencer control panel will appear below the 12 basic buttons. Figure 8-1.
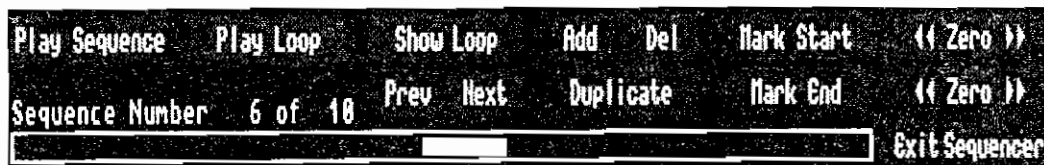

Figure 8-1. Sequencer Control Panel

Play Sequence
This button plays the entire sequence from the beginning. It will include all loops that have been added to the original sample. The sequence can be automatically repeated by clicking the **Loop On** button.

Play Loop
This button plays the current loop that is selected in the **Sequence #** slider. If you want to hear the loop played repeatedly, then activate the **Loop On** button. Within the sequencer control panel loops are like ranges - they both define a region of a sample. You will use ranges to define new loops.

Show Loop

This button works much the same as the **Show Range** button except it zooms in on a loop.

Prev / Next

These two buttons allow you to switch from loop to loop. When you clic the **Next** button, the displayed loop on the screen will be incremented and you will see the next loop in the sequence. The reverse happens when yo click **Prev** (Previous). Notice that if you have duplicate loops in a row th display will not change.

Add

The Add button adds a new loop <u>after</u> the current loop. The marked rang in the display is the loop that will be added.

To add a loop:
1. Select a range.
2. Click **Play Range** to preview the range before making it a sequenced loop.
3. Fine tune the end points of the range. The zoom buttons are useful here.
4. Click the **Add** button to turn the range into a loop.

Delete

The **Del** button deletes the current loop.

Duplicate

The Duplicate button duplicates the current loop. This is useful when y(want to repeat the same loop several times.

Mark Start

This button changes the starting loop point of the current loop to match the beginning of the marked range. This button is useful when you want to change the starting point of an existing loop. without altering the end point. Simply select the new beginning point for the loop by selecting a range and then click the **Mark Start** button.

Mark End

This button changes the end loop point of the current loop to match the end of the selected range. This button is most useful when you want to change the ending point of an existing loop, without altering the starting point. Select the new ending point of the loop by selecting a range and then click the **Mark End** button.

Zero

These buttons seek zero crossings. A zero crossing is a point in the sample where the waveform has a value of zero. The Zero buttons are used to help find the best loop points. Good loop points occur when the beginning and the end of the loop are the same value. If the beginning and ending points of a loop are not the same value, you will hear a click as the loop repeats itself. The easiest way to assure that the beginning and ending values are the same is to set them both to zero. Use the Zero buttons to do this. Click either side of the zero buttons to advance to the next zero crossing. The top zero button controls the start mark, while the bottom zero button controls the end mark.

Exit Sequencer

Click this button to remove the Sequence control panel. It will also be removed it you select another **Edit 2** option that requires a specific control panel. Only one control panel is displayed at once.

Sequence

This slider allows you to quickly choose which loop you want displayed.
Used in combination with the **Prev/Next** buttons, you can switch betwee
different loops easily.

Sequencing Tutorial

The following tutorial illustrates a technique to create a sample that
consists of sequenced loops. The following routine will create a stutterir
effect if applied to a voice sample.

1. Load "VoiceOver", located in the Tutorial directory on the
    Sample Disk.
2. Select the **Edit 2-Sequencer** menu option.
3. Select a small range at the beginning of the sample.(Less than
    1/4 of the entire sample.)
4. Click the **Add** button.
5. Click the **Duplicate** button three times.
6. Select another range. (From the beginning of the sample to the
    middle.)
7. Click the **Mark End** button.
8. Click the **Duplicate** button.
9. Select a small range in the middle of the sample. (Less than 1/4
    of the entire sample.)
10. Click the **Mark Start** button.
11. Click the **Duplicate** button.
12. Click the **Range All** button.
13. Click the **Mark End** button.
14. Click the **Play Sequence** button.

For a demonstration of a music sequence, load "DemoSequence" from th
Sample Disk and click **Play Sequence**.

Chapter 9 - Sampling Details

Audition 4 can be used as a stand alone program to edit sounds obtained from sound libraries. However, you will probably want to sample your own voice and create your own samples. To do that you must have a sound sampler. To create the best quality samples, you will have to take into consideration a variety of parameters. These include the type of sampler, gain level, number of channels, and the sampling rate.

Choosing a Sampler

The most important component in digitizing sound is the sampler. A sound sampler is a piece of hardware that plugs into the parallel port and digitizes sound. For the highest possible quality you will want a sampler that creates consistently clean samples. That is, samples without noise or distortion. Noisy samplers should be avoided along with samplers that do not provide a method for adjusting input gain (volume control).

Some recommended sampler features:

·**Adjustable gain (software or knob)**
·**Mic jack (preamp is a plus)**
·**Noise-free samples**
·**Sampling rates variable between 5-28KHz (at least)**
·**Stereo Channels**

Most likely you already have a sound sampler and are ready to go. However, if you find your sampler inadequate or if you do not have a sampler, keep in mind that Audition 4 was specifically designed for Perfect Sound 3. The combination of the two packages is proven to produce high quality samples.

Sampling

When you select **Sampler** from the **Edit 2** menu, the following Sampler
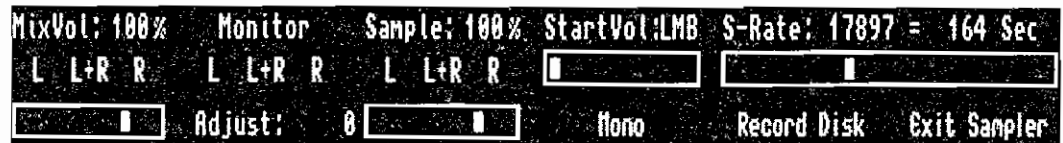Control Panel will appear at the bottom of your screen. See Figure 9-1.

Figure 9-1. Sampler Control Panel

Mix Volume %

The Mix Option, to the left in the Control Panel (Figure9-2) is provided
give you more control when sampling directly into another sample. For
example, you may want to record voice directly over a sample of music
that has already been sampled. An alternate to using the Mix Volume %
feature is to record two separate samples and combine them in the Edit 2
Mix option. The **Edit 2 - Mix** option has added functions such as the Tr
Mix button.

To do a realtime mix with a previously recorded sample:

1. Load the original sample to the window.
2. Save the original sample as backup before mixing in the live sample.
3. Select a range from the original sample to be sampled over. To range the entire sample, click **Range All**.
4. Drag the Mix Volume slider to a number between **0-128%**.
5. Drag the Sample Volume slider to a number between **0-128%**. With both volumes at 100% the new sample mixes evenly with the original range. You will be able to hear both of them equally
6. Test your gain in the monitor mode, see page 59.
7. Click **L** or **R** under Mix Volume% to start the recording process
8. Click the left mouse button to start recording.
9. Click the right mouse button to stop.
10. Click **Play Waveform** to hear the two samples.

Mix R, R+L, L

The **R, R+L,** and the **L** button under "Mix Volume %" allows you to choose which channel of your digitizer you want to mix with the existing sample. <u>Clicking the a channel button under Mix triggers the sampling to be mixed into the current sample.</u>

Monitor

The monitor function is used to check your audio levels before sampling or mixing. When you monitor your audio signal, you are checking gain levels and your sampling rate. For more on Sampling Rates see pages 62-64. When setting your gain you should turn on the **Oscilloscope** and **Level Displays**. They are both located in the **Configuration** menu. If your sample looks like Figure 9-2, the gain level on your sampler was set too high. When the gain is set too high it can cause clipping. Notice that the peaks of the sample go off the graph. When this occurs, you should decrease the gain until the waveform fills the graph completely without peaking off the top. See Figure 9-3.

Setting the gain is dependent on your particular sampler. If you have **Perfect Sound 3**, click the up and down arrow keys just like you would with Perfect Sound Software. Most other samplers will have a knob to adjust. Review your sampler's manual for more instructions on setting gain.
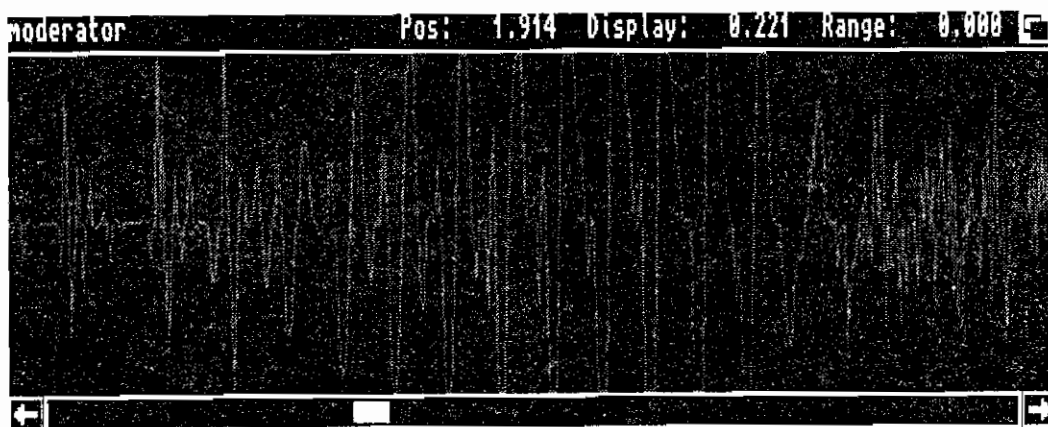

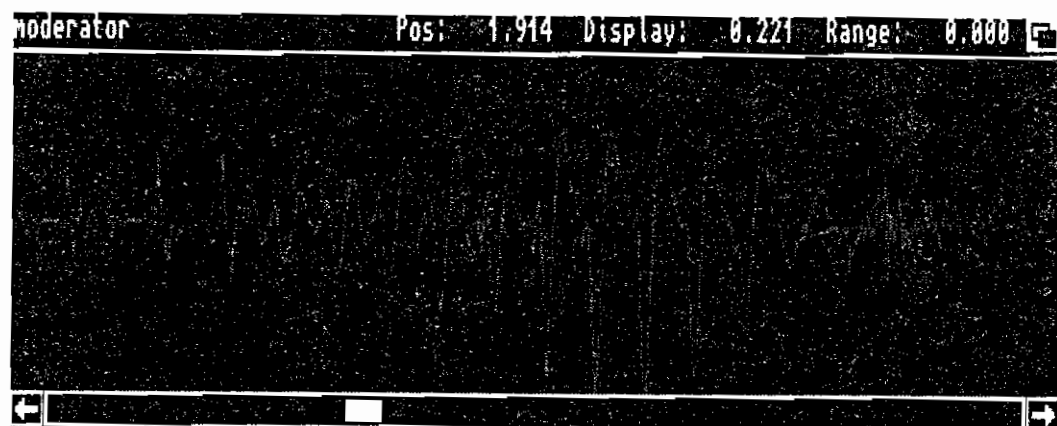**Figure 9-2.** Oscilloscope - Clipping Waveform

Figure 9-3. Oscilloscope - Optimal Waveform

Monitor R, L+R, R

Use the **R**, **L+R**, and the **R** buttons under "Monitor" to select which
channel you want to monitor. When monitoring in mono you can select
or **L**. If you have a stereo sound source and intend to sample from only
one channel, you should monitor that channel.

Adjust Control

Adjust Control will allow you to correct DC offset that is caused by you
sampler. Refer to page 49 for more about DC offsets. Next to Adjust
Control you can type in a number, valid entries are between 64 and -64.
If the signal is coming in from your sampler with a positive offset, ente
negative Adjust Control to lower it. If you prefer, you can sample with
the DC offset unadjusted and correct it later by using the Centralize opt
in the Special menu. Refer to page 49.

Sample %

This parameter controls the volume of the original sample when mixing
live to a previously recorded sample. Select a number from 0-128%.
Refer back to Mix Volume for more information on mixing directly to
sample.

Sample R, L+R, L

The **R, R+L,** and **L** buttons under "Sample" trigger Audition 4 to sample to memory. If you have a range marked on the graph, the digitizer will replace the range by recording over it. When the range has been replaced, Audition 4 will stop sampling. Warning: if you have a small range marked, Audition 4 will sample for a moment and then stop. Click **Clear Range** to remove the highlighted range and sample over the entire waveform. Or, to create a clean slate on which to digitize, select **Delete - Waveform** from the **Project** menu.

Start Volume

Start Volume is the parameter that tells the sampler when it should begin sampling. You can set it to trigger at the touch of a mouse button or it can begin sampling when the sampler registers a certain percentage of the maximum signal strength.

LMB - By moving the marker on the slider all the way to the left, you can set **StartVol** to **LMB,** (Left Mouse Button). When the Start Volume is set to **LMB,** sampling begins when the left mouse button is pressed.

1-100 - The number adjacent to the **StartVol** represents a percentage of the maximum signal possible to start the recording. The horizontal slider will allow you to adjust the Start Volume between 1 and 100. When at 100, an absolute peak will trigger the sampler to begin sampling. If it is set at 50, the sampler will wait until it hears an audio level that is half of the maximum peak. Setting Start volume to a number between 1 and 100 is useful for capturing a sample that has a quiet period before the desired audio begins.

Stereo / Mono

The button beneath StartVol will switch your sampler from recording i
Mono to **Stereo**. Click the button to switch between the two modes.
Don't forget, when you sample in stereo you will use twice as much
memory as when sampling in mono. If your sampler does not have ster
capabilities, you should always keep the button on **Mono**.

Sampling Rate

The sampling rate is simply the rate at which the sound is digitized.
Choosing a sampling rate is usually a trade off between memory usage
and sound quality. The higher the sampling rate, the better the sound, t
the more memory you will use. With any system that records to RAM
floppy disk, you will find that your memory usage can often dictate you
sampling rate.

When recording digital sound, a sampler measures the audio level and
pauses for a period of time, and then measures it again, and then pauses
etc. This process is repeated as long as the sampler is recording. Refer
Chapter 1 - Digital Audio for more information on digital sound.

If you use a high sampling rate. The period will be small, and many
samples will be taken. This results in a very accurate representation of
original sound, however it is very memory intensive. If you decrease th
sampling rate, the period between samples is increased, and the sample
will measure the level of the audio fewer times. This will allow you to
sample for a longer period of time if your memory is limited. Howeve
you will get a less accurate representation of the original sound. See
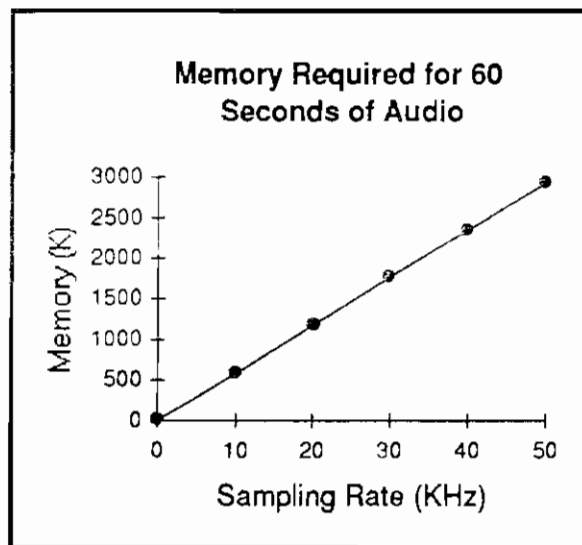Figure 9-4 for the effects of different sampling rates on memory usage.

**Memory Required for 60
Seconds of Audio**

Figure 9-4. Sampling Rate vs. Memory Usage

Some standard sampling rates for your reference.

2,000-Hz	Minimum sampling rate. Provided more for special effects than for accurate samples. It could work for sounds less then 1,000Hz.
8,363-Hz	The standard rate for 8SVX IFF Instrument Files.
28,867-Hz	Maximum Amiga DMA rate. Anything above this will not work with most Amiga software.
28,867-Hz+	Requires play back in a non-multitasking mode.*
44,100-Hz	Compact Disc sampling rate.**

Is 56,000 samples per second better than a CD?

Since Audition 4 can sample at up to 56,000 samples per second
(assuming your hardware can record that fast, most can't) you might think
that you can record better quality sound than a CD player (since CD
players use 44,100 samp/sec.) This is not the case.

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* Programmer's note - This corresponds to an Amiga hardware register "AudPer" of 124.

** CDs use 16 bit audio, not 8 bit like the Amiga. To get CD quality on the Amiga you must install an audio card like the SunRize AD-1016.

Two key parameters specify how "good" audio sounds. The first is the sampling rate. The higher the sampling rate, the higher the frequency response of the sound. Thus, 56,000 samples per second gives you a theoretical frequency response of 25.5KHz. However, no one can hear over 20KHz and the Amiga's playback hardware is limited to 4KHz in normal circumstances. The second key parameter that specifies how "good" audio sounds is the number of bits. Your Amiga has 8 bit sound; CD players have 16. The more bits, the better the "signal to noise" ratio of the sound. Each additional bit doubles the signal-to-noise ratio. Thus 16 bit audio sounds much more than twice as "good" as 8 bit. If you want true CD quality sound on your Amiga, you must add a 16 bit audio card such as SunRize's AD1016.

Setting the Sampling Rate

You set your sampling rate in the Sampler Control Panel, see Figure 9-5. Drag the horizontal bar to the left or right to change your sampling rate (**S-Rate**). Notice that the sampling rate alters the number of seconds you can record with your current memory status. If you want to sample in stereo, click the **Mono** button and it will change to **Stereo**. You will notice that the number of seconds you can record is halved when you switch from mono to stereo.

Figure 9-5. Sampler Control Panel - S-Rate

Creating a Play Disk

Audition 4 offers you the capability to create self booting Play Disks. After you have set the sampling rate and monitored the audio source with the oscilloscope to check the gain and sound quality, you are ready to make a play disk. To record direct to a floppy disk:

1. Initialize a blank disk.*
3. Click **Record Disk**.
2. When it is requested. put the initialized blank disk in your internal drive.**
5. Double check that a <u>blank</u> disk is in the internal drive. All data on the disk in the df0: drive will be lost.
6. Select **OK!**
7. Audition 4 is now recording direct to your floppy disk.
8. Recording will automatically stop when the Play Disk is full. To stop the recording early, click and hold the right mouse button.
9. To hear the Play Disk, reboot your computer keeping the Play Disk in the internal drive.

Audition 4 Play Disks are played by booting the computer with them. Once the disk has played through it will repeat itself. Think of Play Disks as 3 1/2' CDs in a plastic case.

If you do not completely fill the disk with audio, during playback you may hear noise at the end of the sample. The noise is caused by miscellaneous computer data that has remained on disk.

Audition 4 Play Disks are <u>not</u> standard system disks. To reuse a Play Disk as a program disk, you will have to reinitialize it.

Notes on Memory Management

As you gain more experience sampling you will probably begin to wonder why your maximum sample size is smaller than your available memory. This is caused by the fact that Audition 4 requires a contiguous chunk of memory to record to. Audition 4 will always select the largest available

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* To initialize a blank disk, switch to Workbench by clicking the depth gadget, (upper right corner). Put a blank disk into a disk drive and select initialize from the disk menu. Your disk icon must be selected (highlighted) before you can select initialize.

** You cannot record direct to a floppy on an external drive.

chunk of RAM to record to. Example: If you have 2 Megabytes of free
memory. You probably have one largest chunk about 1000K, another
chuck about 700K, and the several remaining chucks making up about
300K. Provided this is your set up, Audition 4 will sample to the 1000K
chuck first , then the 700K chuck, and finally the smaller chunks.

There is an utility called **MergeMem** that scans the memory list and
attempts to combine chunks of memory that are next to each other.
By running MergeMem, you may increase the largest free memory chunk.
MergeMem is located in the System drawer in your Workbench.

Chapter 10 - Saving Sounds and Instruments

Sound files can be saved in a variety of formats. Before choosing a format for a particular sample, you should consider the application that you intend for the file. Most likely you will be saving in IFF format. IFF 8SVX is the standard digital sound file format for the Amiga. Note: 8SVX files will not load into the music programs that expect SMUS files. SMUS refers to a collection of musical notes, not digitized sound.

Waveform, Buffer or Range

Selecting **Save - Waveform**, **- Buffer**, or **- Range** will automatically save the specified area as an IFF sound file. As the standard Amiga sound format, IFF is the format you will use most often. IFF files are exportable to most other Amiga programs, e.g. Amiga Vision, Deluxe Video, and Bars and Pipes.*

Compressed

The compressed option will save your file in IFF format using Fibonocci Delta Compression. This particular compression technique will save each sample as a four bit offset from the previous sample. This will cut your file size by half, but it may reduce the sound quality considerably. Compression is most effective on voice samples.

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* Amiga Vision is a trademark of Commodore Business Machines, Inc. Deluxe Video is a trademark of Electronic Arts. Bars and Pipes is a trademark of Blue Ribbon Sound Works.

If you plan to import a compressed file into another program, first check to see if the other software will load compressed files.

Raw Data

The Raw format is most often used by programmers. This format only stores the waveform data. That is, the information that is required to create the waveform. Information such as sampling rate, loop points, and IFF formatting are discarded. Raw format is exportable to very few programs. SoundTracker is one of the few that will accept Raw Files.

Executable

Saving in the executable format will allow you to play a sample without loading Audition 4 or another player program. To create and play an executable sound file from shell:

1. Create a sample to be saved as an executable sound.
2. Select **Save - Executable**.
3. Next to drawer, type "df1:" (This will save your sample to a floppy disk in the external drive.)
4. Next to file type "play_me".
5. Click **Ok!**.
6. Quit Audition 4. (Select **Quit** from the **Project** menu.)
6. Open shell by double clicking the shell icon.
7. Type **cd df1:**
8. Type **play_me**, return.
9. Your sample will play.

Attach an Icon to a Sample - *A Save Tutorial*

An alternate to playing an executable sample from shell is to assign an icon to the sample. Once an icon has been assigned to an executable file, you can play the sample by simply double clicking the icon. The following tutorial saves the "Hello" sample, located on the Sample Disk, in an executable format and then attaches an icon to it.

First you need to save the "Hello" file as an executable file on your RAM disk.

1. Load the "Hello" sample from the Sample Disk by selecting **Load to Window** in the **Project** menu. See Chapter 2 - Getting Started for help on loading "Hello".
2. Select **Save-Executable** from the **Project** menu.
3. Click within the drawer box and clear the existing text by typing RA-X.
4. Type **RAM:** in the Drawer box.*
5. Click within the file box and clear the existing text by typing RA-X.
6. Type **Hello.exe** in the File box.**

The second step is to assign the icon. Audition 4 provides a Sample Icon to simplify the process.

1. Quit Audition 4 by selecting **Quit** from the **Project** Menu.
2. Double click the RAM disk icon.
3. Double click the Audition 4 icon.
4. Drag the Audition 4 "Sample Icon" into the RAM disk window.
5. Rename the "Sample Icon" in the RAM disk window by highlighting the icon, and then selecting **Rename** from the

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* If you are low on memory you can substitute df0: for RAM:.

** The suffix ".exe" is not required. It is used in this tutorial to differentiate between the executable "Hello" file and the original IFF file.

Workbench menu. Type "Hello.exe" when you are prompted for a new icon name and hit return. The icon name must match the file name from the above.

6. You can now double click the icon to hear the "Hello.exe" sample.
7. Store the sample on a floppy disk. Put a disk in an external drive and drag the icon onto the desired disk icon. The icon and the attached sound will be stored on the floppy disk.

If you do not remove the sample from the RAM disk, it will be lost when your Amiga is turned off.

Configuration

Save - Configuration is <u>not</u> a sound file format. Configuration refers to the menu that includes: enable oscilloscope, type of sampler, colors, etc. After you have customized Audition 4 to your preferences, you can select **Save - Configuration** and your setup will load whenever you run Audition 4.

Configuration is saved in the s: directory. This file is located on your boot disk. If you booted from Audition 4 , you will need to remove the write protect before saving the configuration. If you booted from a custom boot disk, Audition 4 will transfer the configuration file to the s: directory on the disk. See Chapter 11 - Configuration for details on all your options in the Configuration menu.

Instrument

Audition 4 provides a variety of ways to save instrument files. If you intend to use your sound files in music programs such as Deluxe Music Construction Set (DMCS) you will need to save your files as IFF instruments files. Almost all Amiga music programs will accept IFF Instrument files, with the notable exception of Sonix, see page 71.

IFF Instruments

IFF instruments are the most popular instrument format for the Amiga. You may choose to save your one octave sound as either 1, 3, or 5 octaves. Be warned, saving sounds as 3 or 5 octaves will produce significantly larger files on disk, so make sure you have enough memory to accommodate them.

IFF instruments have the added ability to save a loop point. A loop point is any marked range that is highlighted when the sample is saved. If a range is not selected, then a loop won't be saved. You may preview the loop by clicking the play range button while the loop is on. This will continuously play the loop.

Note: If a loop is positioned in the middle of a sample, Audition 4 will not save the portion of the sample to the right of the loop.

Sonix Instruments

Sonix* is a popular music composition program that requires a special file format. With Audition 4 you can save samples in the Sonix format. When you save a sample in Sonix format, Audition 4 creates two files: a .inst file and a .ss file. Both of these files must be present to load the sample in Sonix. If you want to edit a Sonix sample, load the .ss file into Audition 4. You may save the sample as 1, 3, or 5 octaves. Three and 5 octave samples will produce significantly larger files.

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* Sonix is a trademark of Aegis Inc.

Chapter 11 - Project Options

About...

The **About...** requester brings up the credits and the software version
number. There is also a Memory Display in the **About...** window. The
Memory Display cycles through readouts for Free, Chip and Fast Memory
when clicked. Free Memory is the total unallocated RAM in your system.
Click the Free Memory Display and it will change to a Chip Memory
Display. Chip Memory is the RAM that is addressable to the Amiga's
sound and graphics chips. Click the Display again and you will see your
available Fast Memory. All memory that is not Chip is called Fast
Memory. It is called fast because programs in it will run faster in some
cases.

Loading to Window or Buffer

When you select **Load to Window** or **Load to Buffer** a file requester
(Figure 11-1) will appear in the middle of the screen. File requesters are
generally straightforward, but if you are new to the Amiga, you may want
to go through the following tutorials.

A quick load to window

To load the "Hello" sample, located on the Sample Disk, to the display
window:

1. Put the Sample Disk in the external drive.
2. Select **Load to - Window** from the **Project** menu.
3. Click on **df1:** in right column.
4. Click on **Tutorial** (**dir**) in the left column.

5. Select the "Hello" file left column.
6. Click the **OK!** button.
7. The "Hello" file will load to your window.

Any operation that requires file input or output, like load and save will bring up a file requester. For details on the requesters see below.
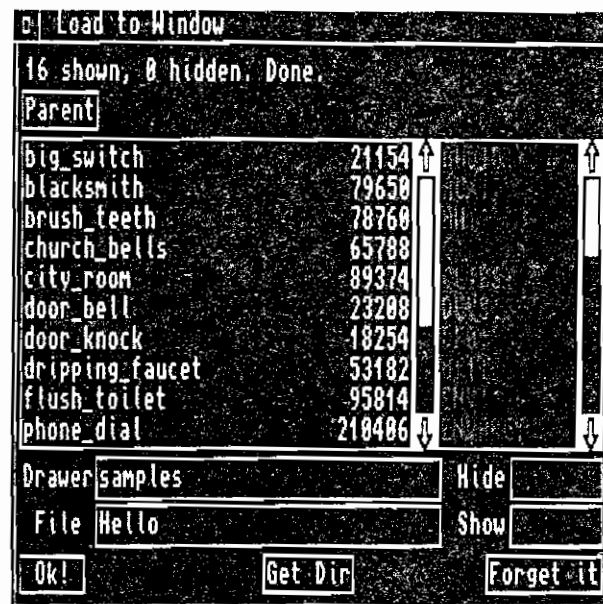
Figure 11-1. File Requester

The Operation of a File Requester

The most prominent feature in the file requester is the file list. The file list is on the left. Every directory listed in the file list is a subdirectory of the current directory. The current directory is displayed to the right of the word **Drawer**.

You can select the file requester's current directory by selecting a subdirectory in the file list, or a device in the device list. The device list is on the right. Click any directory in the device list or file list to make that directory become the current directory.

To go back upwards into the file system, you can use the **Parent** button. If your current directory is df1:Sounds/Voice and you click the **Parent** button, the current directory will change to df1:Sounds. Clicking the button again will change the current directory to df1:.

You may select a file at any time, even while the file list is being updated. Select a file by double clicking on its name or by typing the name in at the word **File**. After you type in the name, hit return or click the **OK** button.

The two gadgets, **Hide** and **Show** are located at the bottom right. Both gadgets hold criteria which is applied to every file in the file list. If the criteria is met, then the file will be shown or hidden depending on the which gadget holds the criteria. For example, if you had six files: car1, car2, car3, voice1, voice2, voice3. You could hide the car files by typing "car*" in the **Hide** gadget. The files which are hidden can be made visible by updating the **Show/Hide** criteria.

Load RAM Scan

A RAM Scan is a comprehensive look at your computer's memory. All the current data stored in RAM* will be displayed on the graph. This includes, program data, graphic data, and the operating system. Not to mention any samples that have been recorded to memory.

When you **Load RAM Scan** from the **Project** menu, a control panel will appear at the bottom of the screen. Figure 11-2. The control panel will allow you to switch the display between Chip RAM and Fast Ram, and to grab a selected range from the display. You will not be able to edit in RAM Scan. Editing RAM directly would risk crashing your entire computer. Just consider the results of accidently deleting or zeroing the RAM that contains your operating system.

---

* Random Access Memory

Figure 11-2. RAM Scan Control Panel

Playback Rate
You can adjust the playback rate of the RAM display to fast forward through the data.

Grab Range
While in the scan mode, you can use your 12 basic buttons as usual. So you are free to play, zoom, and select ranges. If you find something of interest in the RAM waveform, you can highlight it and click the **Grab** button to move it to the display. Once a range is grabbed, the RAM Scan control panel will close and you can edit as usual.

Chip/Fast RAM
This is a toggle button. Click it to switch between the **Chip RAM** and **Fast RAM** display. Chip RAM is the memory that is accessible by the Amiga's sound and graphic chips. Fast RAM is any memory that is not Chip RAM. Fast RAM is called fast because programs in Fast RAM will, in some cases, execute faster that they would if they were in Chip RAM.

When you toggle from and back to a type of RAM, you may notice that the waveform does not remain the same. This is because RAM contents are transitory in nature and are always changing.

Exit Scan RAM
Click this button to remove the RAM Scan control panel and to resume editing.

One application for RAM Scan is to load a program that has interesting sound effects embedded in it. When you do a RAM Scan, you may find some of the sounds mixed in with the program data. When you locate a useful sound, use the grab gadget to copy it to the display for editing or saving.

Save and Save Instruments

Due to the complexity of these options an entire Chapter has been
dedicated to the saving of sound files. Please refer to Chapter 10 - Saving
Sounds and Instruments.

Play File

By selecting this option, you can play a sample without loading the
waveform. Choose the sound file by clicking the desired sample name
from the file requester that appears when the option is selected. Click
OK! to hear the sample play. This is useful to quickly find a desired file.
Play file requires noncompressed IFF files to play. Raw and compressed
files must be loaded before they can be played.

Delete

File

When you select **Delete - File**, you bring up a delete file requester. This
requester operates similarly to the load file requester, except that the
selected file will be deleted and removed from disk.

Buffer

This option empties the copy buffer.

Waveform

By selecting **Delete - Waveform**, you will clear all data from the
waveform display. This is useful when preparing to digitize a sample.

Print

To print a copy of your waveform:

1. Turn off the computer and remove your sampler.
2. Connect your printer as normal. Refer to the printer manual for instructions.
3. Turn on the computer and the printer.
4. Disable the **Oscilloscope** option in the **Configuration** menu if it is enabled. (Remove the checkmark.) You cannot print while the oscilloscope is displayed.
5. Exit any control panel that may be open. An open control panel will cause the 12 basic buttons to print below the waveform.
6. Select **Print** from the **Project** menu.
7. Click **OK!**.

Quit
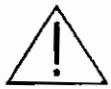
Quit will allow you to terminate the Audition 4 program. Don't forget to save the current sample in the display window and your buffer. If you quit without saving, they will be lost.

Chapter 12 - Configuration

Most of the configuration options have two positions: enabled and disabled.* The check mark to the left of the option indicates that it is enabled. For more information on saving your configuration setup, see page 70.

Stereo Mode

By turning on the stereo mode you will see two waveforms in the display window. Now you are ready to sample or edit in stereo.

While in the stereo mode, the top graph is the Left Channel, the bottom is the Right Channel. The oscilloscope and level meters also measure the amplitude of separate channels. See Figure 12-1.

To return to a mono channel, disable stereo mode. Turning off stereo mode while a stereo waveform is in the display window will cause the waveform to be converted to mono. A requester will appear prompting you to select left, both, or right. If you select left or right, that channel will be kept and the other lost. "Both" creates a mono sample by mixing the left and right channels together.

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* To enable an option, click the right mouse button and move the cursor to the configuration menu. While holding down the button, move the cursor down to the option you want to enable. (If there is a check mark next to the option, it is already enabled.) Release the mouse button when the option becomes highlighted. Now that option is enabled. To disable an option, repeat the same process, removing the check mark.
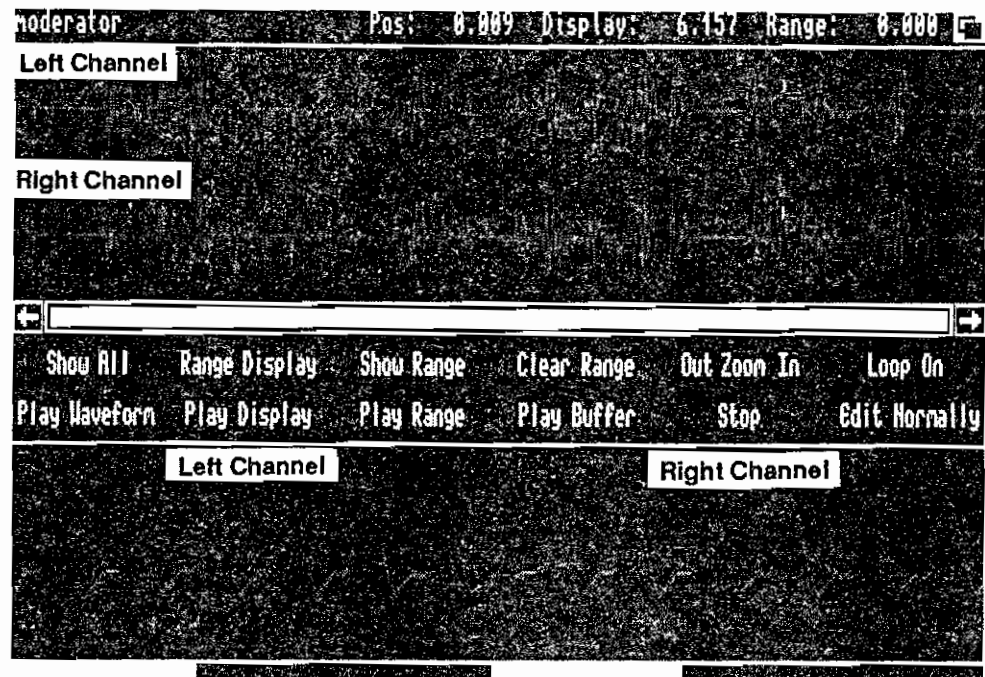
Figure 12-1. Stereo Screen Display

Ok Requester

When the Ok Requester is enabled, an Ok! requester box (Figure 12-2) will pop up whenever you select an option that will alter your waveform. It is recommended that you keep this option enabled until you have become familiar with the program. Remember that many of the edits are irreversible.
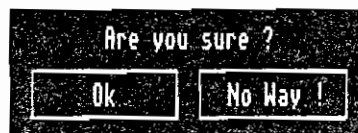
Figure 12-2. Ok Requester

Lowpass-Filter

All digital sound systems require a lowpass filter on the audio output. This cuts out high frequencies that would create an aliasing effect if allowed to play. The Amiga's lowpass filter operates at 7KHz with the filtering starting to effect signals at 4KHz. All Amigas, with the exception of the Amiga 1000, can turn off this lowpass filter. This means that you can increase your frequency range, but you risk introducing aliasing in your playback. To turn off the Amiga's lowpass filter, disable the **enable lowpass filter** option (remove the checkmark).

Position Line

The position line is the vertical line that indicates the current position on the displayed waveform as it is being played. You should keep this option enabled. If you tend to confuse the position line with the cursor line, keep in mind that the position line does not respond the movement of your mouse.

Oscilloscope

The Oscilloscope option places a realtime oscilloscope near the bottom of the display. The oscilloscope appears above the level displays, if they are enabled. The oscilloscope will operate whenever you play or monitor a sound. If you are in the stereo mode, notice that the left channel is graphed on the left and the right channel is on the right. The channels are separated by a space in the middle, Figure 12-1. The Oscilloscope is especially helpful when setting gain levels before sampling.

Level Display

With the level display enabled, two peak meters will be activated on the bottom of the Audition 4 screen. These meters are true signal peak meters. They measure the amplitude of a signal. When enabled during monitoring, if the meters show red you should check your input for clipping. See page 59 for more on clipping. In the stereo mode, the right display is measuring the right channel and the left display is measuring the left channel.

Cursor

As you move your cursor over the display window, your arrow will become a vertical line if this option is enabled. If the cursor option is disabled, the mouse pointer will serve as a cursor to mark ranges and loop points. You can change the color of the cursor by selecting a new color in **Colors - Cursor:** in the **Configuration** menu.

Type of Sampler

Play while sampling
This feature should be enabled if you would like to hear your samples play as you are sampling. Disabling will allow you to sample at higher sampling rates.

Generic
This setting should be enabled if you have a sampler other than Perfect Sound. Audition 4 requires samplers that plug into the parallel port. It will not recognize serial and joystick port samplers.

Perfect Sound 1&2

If you have a version of Perfect Sound previous to 3.0. you should activate this option. You should also consider upgrading your hardware. Perfect Sound 3 is vastly improved over previous versions, especially in the area of sound quality. Please contact us for details on upgrading Perfect Sound.

Perfect Sound 3

Enable this option if you have Perfect Sound 3. Remember that Perfect Sound 3 has three input jacks: 2 RCA jacks and 1 mic jack.

Colors

These options will allow you to tailor the Audition 4 screen colors to your preference.

Adjust Colors

This option will bring up a palette window, see Figure 12-3. A palette window will allow you to mix your own screen colors.
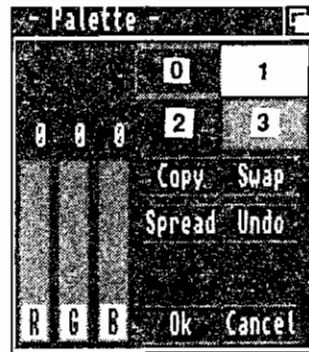
Figure 12-3. Palette

To alter your colors, you can just adjust the R G B sliders until you reach a desirable combination. Click one of the four color boxes at the top right of the screen to switch between colors. Each color can be associated with a number, 0 - 3. The color boxes go from left to right starting at the top.

Each color box controls the color for a several screen items. For Example: Color #3 controls the waveform and the range.

Swap is useful to switch two colors. To swap colors 1 and 2, highlight the box around color #1, click **Swap**, then highlight color #2. These colors will now swap positions.

Copy will allow you to the same color to two different positions. Click the color you want to copy, click **copy**, then click the color you want replaced.

Spread is very helpful when you are trying to create a color scheme that is based on two complementary colors. For example if you wanted to create a gray level screen, make color #1 black, and color #4 white. First highlight the black color box, click **Spread**, then highlight the white color box. Colors 2 and 3 will become two different shades of gray.

Undo allows you to back up one change.

Ok! will accept the new color scheme. **Cancel** will exit the palette without implementing any changes. To store a color scheme, make your alterations and then select **Save - Configuration** from the **Project** menu, see page 70. Your color scheme will now load every time you run Audition 4.

Workbench Colors
This option changes the Audition 4 colors to match your Workbench colors.

Cycle Colors
Cycle colors will use the same colors as chosen in the palette, but will assign them to different numbers. That is, it will swap the colors all around. You can go through twenty-four variations with the same four colors.

Last Saved

This will call up the color scheme that was selected when you last saved your configuration. To store a color scheme, make your alterations and then select **Save - Configuration** from the Project menu, see page 70.

Default

This will return the screen to the original Audition 4 colors.

Cursor (Color 1,2,3)

This will change the color of your cursor line. Colors 1, 2 and 3 cannot be adjusted in the palette - they are regulated by your Workbench colors.

Close Workbench Screen

When working in Audition 4, you can click the depth gadget to switch from Audition 4 to Workbench. If you are trying to maximize your memory for the largest sample possible, you may want to close the Workbench screen. To close it, enable the **Close Workbench Screen** option. Once Workbench is closed, you will have more memory available. You should close all windows in the workbench that are open. Some types of windows, if open, will prevent you from closing the Workbench screen. To reopen the Workbench Screen, disable the option.

HiFi Playback

When the HiFi Playback option is enabled, Audition 4 will use a special High Fidelity playback routine. HiFi refers to an intensive method of playback. Normally the computer is occupied by playing the sample and updating the waveform and screen. In the HiFi mode, the screen goes blank, so the computer can dedicate more energy to playing the sample. Because the computer has more time to dedicate to the playback, the time

between each sample is more exact. Therefore, your sample will sound better.

Appendix A - Menu Guide

Project Menu

About...			Displays Title Page.
Load -	to Window	RA-L*	Loads a file into the window.
	to Buffer		Loads a file into the buffer.
	Ram Scan	RA-G	Displays waveform of RAM in window.
Save -	Waveform	RA-W	Saves waveform as an IFF file.
	Buffer		Saves buffer as an IFF file.
	Range		Saves range as an IFF file.
	Compressed		Saves waveform as a compressed IFF file.
	Raw Data		Saves waveform as raw data.
	Executable		Saves waveform as an executable file.
	Configuration		Saves configuration setup to s:Audition.config.
Save Instrument -	IFF 1 Octave		Saves waveform as a 1 octave IFF Instrument.
	IFF 3 Octave		as a 3 octave IFF instrument.
	IFF 5 Octaves		as a 5 octave IFF instrument.
	Sonix 1 Octave		Saves waveform as a 1 octave Sonix file.
	Sonix 3 Octaves		as a 3 octave IFF instrument.
	Sonix 5 Octaves		as a 5 octave IFF instrument.
Play File		RA-P	Plays an IFF file from disk.
Delete -	File		Deletes a file from disk.
	Buffer		Removes the waveform in the buffer.
	Waveform		Removes the waveform in the display window.
Print			Prints current waveform.
Quit		RA-Q	Exits Audition 4.

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* Notation for Keyboard Short Cuts, Right Amiga key followed by the corresponding letter or number.

Edit 1 Menu

Delete Range		RA-D	Removes ranged waveform.
Keep Range		RA-K	Removes all of the waveform except ranged area.
Copy Range		RA-C	Copies range to buffer.
Zero Range		RA-Z	Fills range with zeros (silence).
Overwrite		RA-O	Replaces the displayed waveform with the buffer, beginning at cursor.
Cut Range to -	Buffer File	RA-X	Removes ranged data, placing it in the buffer. or file.
Insert from -	Buffer File	RA-I	Inserts data at cursor, from buffer, or file.
Add Workspace -	1 sec 5 sec 10 sec		Inserts time of 1 second at cursor. 5 seconds. 10 seconds.

Edit 2 Menu

Mix		RA-1	Places Mix controls on screen.
Echo		RA-2	Places Echo controls on screen.
Fade		RA-3	Places Fader controls on screen.
Flange		RA-4	Places Flanger controls on screen.
Filter		RA-5	Places Filter controls on screen.
Sampler		RA-6	Places Sampler controls on screen.
Sequencer		RA-7	Places Sequencer controls on screen.
Tune Waveform		RA-8	Places Waveform Tuner controls on screen.
Invert -	Range Buffer	RA-V	Reverses the phase of the ranged waveform. or buffer.
Backwards -	Range	RA-B	Reverses data of sample in range. buffer.
Swap Channels -	Range Buffer	RA-N	Swaps left & right channels in range. or buffer.
Swap Buffer & Main			Swaps buffer with waveform in display window.

Special Menu

Smooth	RA-S	Reduces signal.
Maximize	RA-M	Increases signal to maximum.
Centralize	RA-N	Adjusts for DC offset.
Lift Treble		Performs a high-pass filter on range.
Lift Bass		Performs a low-pass filter on range.

Configuration Menu

Stereo Mode			Changes program mode from mono to stereo.
Ok Requester			Causes confirmation requesters on editing functions to appear.
Low Pass-filter			Turns on and off the Amiga low-pass output filter.
Position-Line			Shows play point in waveform.
Oscilloscope			Places an oscilloscope window on screen.
Level Display			Places peak meters at the bottom of the screen.
Cursor			Changes waveform cursor from a line to a pointer.
Type of Sampler -	Play while Sampling		Allows Amiga to play audio as it passes through the sampler.
	Generic		Universal parallel port sampler setting.
	Perfect 1&2		Perfect Sound 1 & 2 setting.
	Perfect 3		Perfect Sound 3 sampler setting.
Colors -	Adjust Colors	RA-$	Places color palette on screen.
	WBench Colors	RA-%	Sets screen colors to workbench colors.
	Cycle Colors	RA-&	Rotates colors in palette.
	Last Saved		Uses colors last saved in configuration.
	Default		Uses Audition 4's default colors.
	Cursor -		Changes the color of the cursor to:
	Color 1-3		pointer colors 1, 2 or 3.

Configuration Menu (cont.)

Close Workbench Screen			Closes Workbench Screen to maximize available memory .
HiFi Playback			Uses HiFi playback when applicable.

Appendix B - Technical Support

If you suspect any problems with your Audition 4 software. please note the following instructions.

1. Open the **read_me** file on disk. This file contains any updated information that is not included in this manual.

2. If you are unable to boot the program and suspect a bad disk,

   a. Return the package to your dealer for replacement.
   b. Within 3 months of the purchase date - Mail in the defective disks and a copy of your receipt to SunRize Industries. An RA number is not necessary. Upon receipt, the damaged disks will be replaced.
   c. After 3 months from the purchase date - Mail in the defective disks and $5.00 for every replacement disk. An RA number is not necessary.

3. If you suspect a malfunctioning sampler, contact the manufacturer of the sampler. Perfect Sound owners, call SunRize for information on repairs and upgrades.

4. Before calling SunRize be sure to have the software version number handy. The version number is found in the About... window.

SunRize Industries Technical Support can be reached at (408) 374-4962. Technical Support is available Monday through Friday from 8:00 a.m. to 5:00 p.m. (Pacific Time).

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Audition 4 User's Guide

Index